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Executive summary

Pharmaceutical distributors are at the heart of the US health care ecosystem. Distributors handle 92 percent of pharmaceutical sales and add efficiency and order to a supply chain that connects two highly fragmented markets: 1,300 manufacturers and 180,000+ points of dispensation.¹

Distributors do much more than serve as the intermediary that ships products from manufacturers to pharmacies and providers. Distributors purchase and take legal ownership of pharmaceuticals and manage both inventory and credit risk; this allows manufacturers to focus on their core competencies of pharmaceutical drug development and manufacturing.

Distributors amplify value in the health care ecosystem by delivering aggregation efficiencies and economies of scale that reduce capital and operating expenses for the broader pharmaceutical value chain. Distributors play a critical role in supporting patient safety, enabling the right product to reach the right patient in a timely and transparent manner, including processing over 200 recall events per year.²

Emerging and converging market trends are impacting and reshaping distributors' traditional role of health care intermediary. These trends are providing both opportunities and challenges; in response, distributors are evolving and adapting to ensure that their services provide added value today and in the future.

Introduction

The numbers tell the story: Pharmaceutical distributors are critical players in the US health care ecosystem (figure 1). Ninety-two percent of prescription pharmaceuticals flow through a complex, secure ecosystem comprised of patients, providers, pharmacies, distributors, group purchasing organizations (GPOs), manufacturers, pharmacy services administration organizations (PSAOs), pharmacy benefit managers (PBMs), and payors. According to this report's chosen valuation methodology, distributors' core services of efficient product distribution, inventory management, financial risk management, and information-sharing generate \$33 billion-\$53 billion in value annually to the health care ecosystem.³

Figure 1: Importance of pharmaceutical distributors

Distributors provide patients across the United States with safe, quick, and low-cost access to more than four billion prescriptions annually



180M patients regularly take a prescription medicine¹



231 average number of recall events processed by each distributor annually, supporting supply chain safety²



1,300 manufacturers are served by distributors, on average²



83% of customers receive deliveries of prescription pharmaceuticals five times per week or more, reducing provider inventory levels and costs²



22,000+ independent pharmacies are supported by distributors' core and value-added services³



180,000+ dispensation points are supplied by distributors whose customers include chain and independent drug stores, larger retail outlets, hospitals, and physician offices²



11.3M prescription units are purchased from distributors each business day²

Sources: ¹WebMD "Americans Taking More Prescription Drugs Than Ever," ²HDA Factbook 89th Edition, ³NCPA Digest 2017

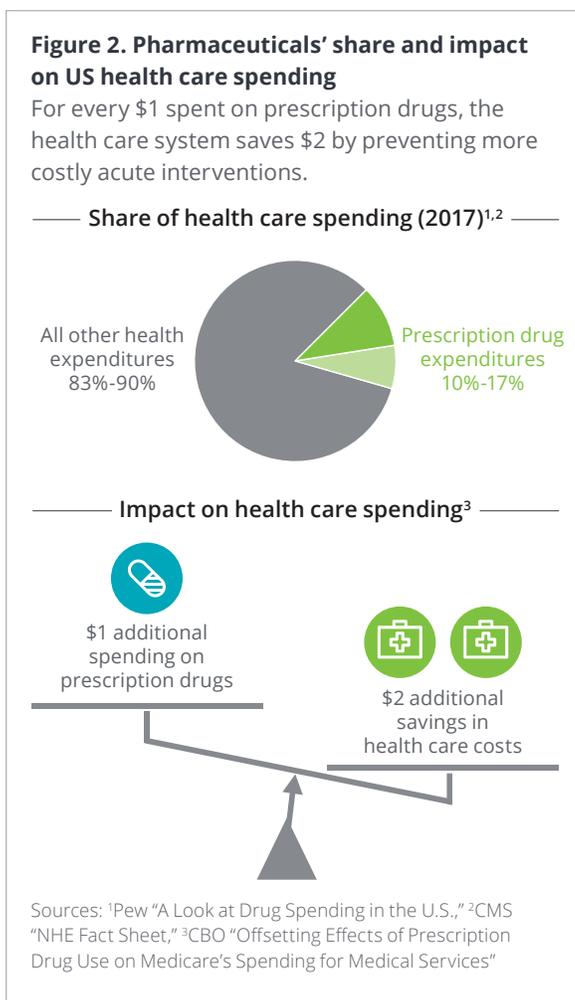
Many distributors continue to evolve beyond their flagship offering of core services to extend services to ecosystem stakeholders while minimizing costs. In addition to enabling a secure, transparent, and efficient pharmaceutical supply chain that safeguards patient safety, distributors offer value-added services such as independent pharmacy support, generic sourcing programs, hub services, and innovative partnerships. This evolution is essential to remaining a critical player in the health care ecosystem, as numerous emerging and converging trends—among them, industry consolidation and integration, personalized care, technology advances, nontraditional competitors, and public scrutiny—will likely impact distributors' existing business models and offer new opportunities for growth through, for example, blended service offerings and analytics-driven insights.

As they model future scenarios, each pharmaceutical distributor should consider variables including: changes to pharmaceutical pricing legislation and regulation, the rapid expansion of personalized care, a reimagined "last mile," and increased use of transaction and patient data. This report examines the current role of distributors in the health care ecosystem, the near-term challenges and opportunities they may face, and their potential future role in a transformed market.

Chapter 1: Health care ecosystem overview

Criticality of pharmaceuticals to health care

Pharmaceuticals account for a small share of all health care expenditures; however, they have a disproportionately large impact on patients and the overall health care system (figure 2):



- Estimates of prescription drug expenditures as a share of national health expenditures varies by source between 10 percent and 17 percent.⁴
- Based on national health expenditures of \$3.5 trillion, the value of prescription drug expenditures ranges from \$350 billion to \$595 billion.⁵
- Pharmaceuticals add value to the overall health care system and patient care by preventing higher-cost acute interventions.⁶ Every \$1 spent on prescription pharmaceuticals saves an estimated \$2 in overall health care costs. For example, studies show that each diabetic patient who is treated for the condition can reduce health care costs by \$6,394, a large opportunity when considering the 110 million US diabetic and pre-diabetic population.⁷

There are three classes of prescription pharmaceuticals designed to manage patient care:

- **Branded pharmaceuticals** are manufactured by a company that holds exclusive rights granted by a patent to produce that drug—there are no direct competitors to this drug for the useful life of the patent. Branded drugs accounted for 51 percent of the pharmacy sector's \$412 billion of revenue in 2017;⁸ however, public scrutiny and government pricing controls may contribute to a plateau in branded drug revenue.
- **Generic pharmaceuticals**^{*} can be produced by several companies since these are manufactured after the exclusive patent rights granted to the original manufacturer have expired—there can be high levels of competition in this segment. Generics accounted for 90 percent of total outpatient prescriptions dispensed in 2017, a rise of 39 percentage points from 2002. They comprised 15 percent of the pharmacy industry's 2017 total revenue.⁹
- **Specialty pharmaceuticals** are designed to treat costly medical issues incurred by a small portion of the population—this segment has a branded and generic component based on whether the patent granting exclusivity has expired. Specialty drugs accounted for 33 percent of pharmacy industry revenues in 2017; this share is expected to increase to 47 percent in 2022.¹⁰

*Due to the commercially nascent nature of the biosimilars category, generic pharmaceuticals as they are defined in this report do not include biosimilars.

Three hidden negotiators support pharmaceutical access to patients in a way that often goes unnoticed. The **group purchasing organization (GPO)** helps providers and pharmacies save money by aggregating purchasing volume to negotiate discounts from manufacturers and other ecosystem participants, resulting in lower-priced medications. **The pharmacy benefit manager (PBM)** negotiates formularies with providers and pharmacies; this dictates the drugs patients can access at various dispensation points and what price they pay for those drugs. The **pharmacy services administration organization (PSAO)** enables pharmacies—particularly smaller independent pharmacies—to provide patient access to affordably priced drugs by supplying the pharmacies with tools, systems, and consulting services and negotiating contracts with PBMs and payors.

Maintaining pharmaceutical supply chain security and integrity

The US government, distributors, and other health care stakeholders work collaboratively to maintain the integrity of products in the pharmaceutical supply chain so that patients can be assured they are receiving the right product in the right dose. Numerous laws, regulations, and initiatives exist to strengthen supply chain security and safety amid mounting domestic and global threats. Among them:

The **Drug Supply Chain Security Act (DSCSA), championed by distributors**, aims to trace prescription drugs as they move through the supply chain. DSCSA:

- Protects consumers from drugs that may be counterfeit, contaminated, or stolen.
- Improves the detection and removal of potentially dangerous drugs from the supply chain.
- Requires end-to-end traceability of prescription pharmaceuticals through interoperable electronic systems.
- Helps eliminate unregulated transactions by requiring the authorization of all trading partners.
- Enables saleable returns to minimize cost and the impact of production constraints.¹¹

Controlled Substance Suspicious Order Monitoring (SOM) programs, required of distributors and other registrants and overseen by the US Drug Enforcement Administration (DEA), mandate that registrants report any suspicious customer orders with the goal of reducing the prevalence of illegal or abusive acquisition of controlled substances.¹²



Distributor response to DSCSA



The Healthcare Distribution Alliance (HDA) partnered with the pharmaceutical industry to develop voluntary industry guidelines for electronic data interchange (EDI) and barcoding to facilitate the exchange of information between ecosystem participants.



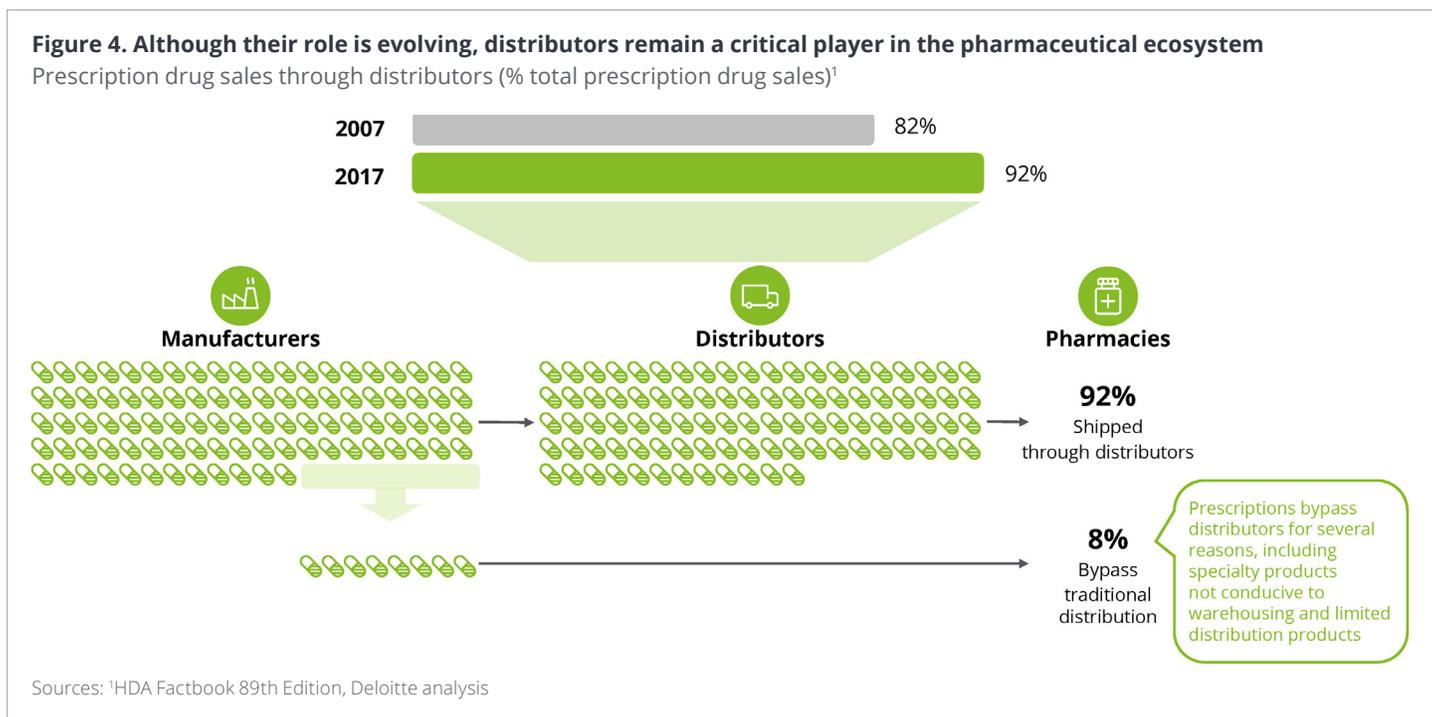
HDA launched a verification router service project to help distributors and manufacturers meet their serial number verification obligation for saleable returns.



Distributors are piloting blockchain technology to enable traceability and DSCSA compliance.

Chapter 2: Evolving role of distributors

As their role evolves to keep pace with changes in the US health care system, pharmaceutical distributors remain a critical player in facilitating patient access to prescription drugs. Ninety-two percent of all prescription drug sales flowed through distributors in 2017, up from 82 percent in 2007 (figure 4).¹³

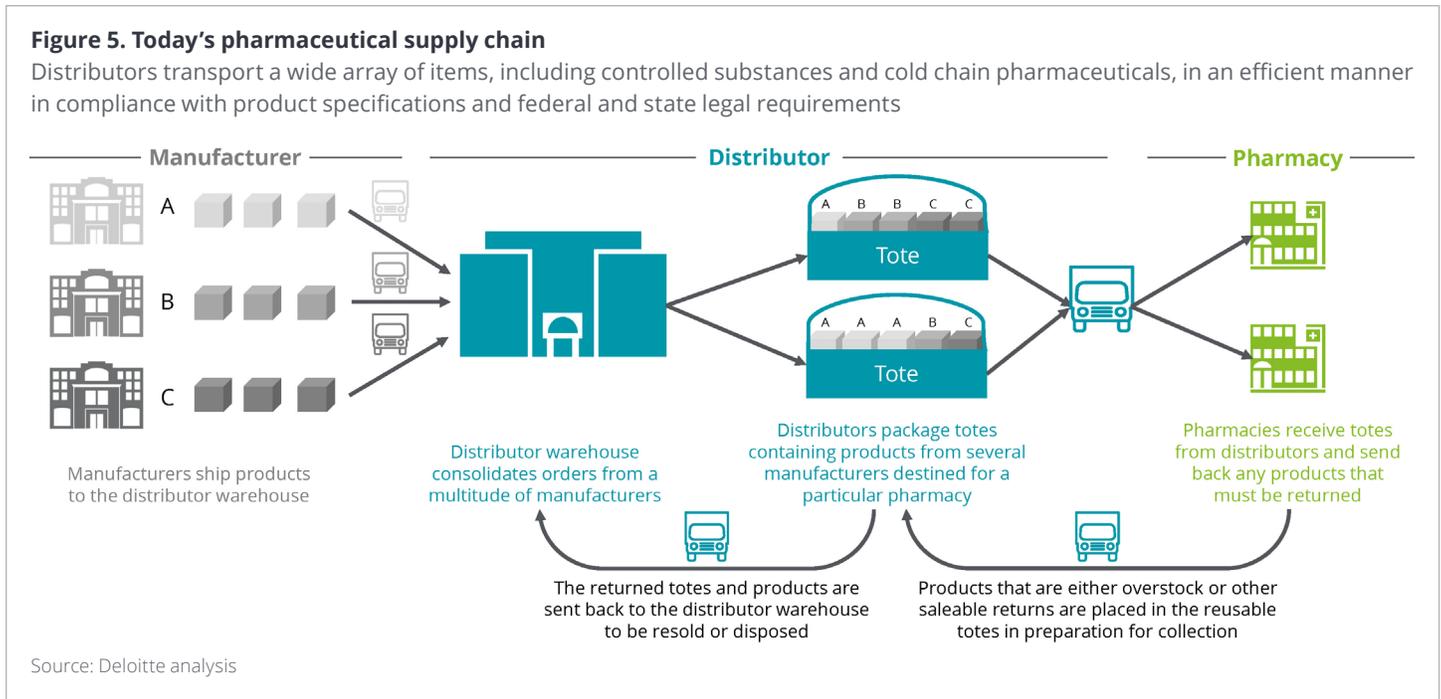


Pharmaceutical distributors' \$450 billion in annual revenue is highly concentrated among three traditional full-line distributors: AmerisourceBergen, Cardinal Health, and McKesson.¹⁴ The share of the market for these three companies grew from 87 percent in 2013 to 92 percent in 2017. In addition to dominating branded and generic drug distribution, several key acquisitions have enabled these three companies to become the leading channel for specialty pharmaceuticals, accounting for more specialty drug volume than all other channels combined. In 2017, specialty drugs accounted for more than 30 percent of full-line distributors' revenues.¹⁵ Despite generating large top-line revenues, these three companies operate with very low margins while delivering exceptional efficiency to the ecosystem.

Smaller full-line distributors also play an important role in the pharmaceutical ecosystem by serving smaller independent customers or operating in selected geographic-/product-focused niche markets. In their efforts to grow revenue, minimize costs, and broaden their channel role, distributors both large and small are cultivating innovative partnerships and providing services beyond core distribution, such as pharmacy support.

Inside today's pharmaceutical supply chain

Distributors play a critical role in maintaining the integrity of today's closed-loop supply chain by consolidating manufacturer orders, delivering products to pharmacies, and processing returns (figure 5). These core services deliver important benefits:



Core benefit: Efficiency

Distributors are generally extremely efficient in meeting the pharmaceutical demands of customers and patients, offering daily direct shipment to the vast majority of pharmacy locations, typically using one of two delivery models. In the **self-warehousing model**, distributors are responsible for delivering prescription pharmaceuticals to the retailer's warehouse; the retailer then distributes the drugs to its individual stores. Few customers select this model given its risk exposure, challenges meeting distributor service levels and savings, and high infrastructure requirements. In the **direct-to-store model**, distributors are responsible for delivering prescription drugs directly to each of the retailer's stores, bypassing the retailer's warehouse, if one exists. This model is increasingly preferred by the market, representing 93 percent of sales in 2017 (up from 74 percent in 2007).¹⁶ Several national pharmacy chains, all with strong logistics capabilities, have moved away from self-warehousing prescription pharmaceuticals, supporting the benefit of distributor collaboration.

Distributors' continued investment in digital technology has helped them meet growing pharmaceutical demand in a highly efficient manner. Over the past decade, in part due to these technological advancements, distributors have:

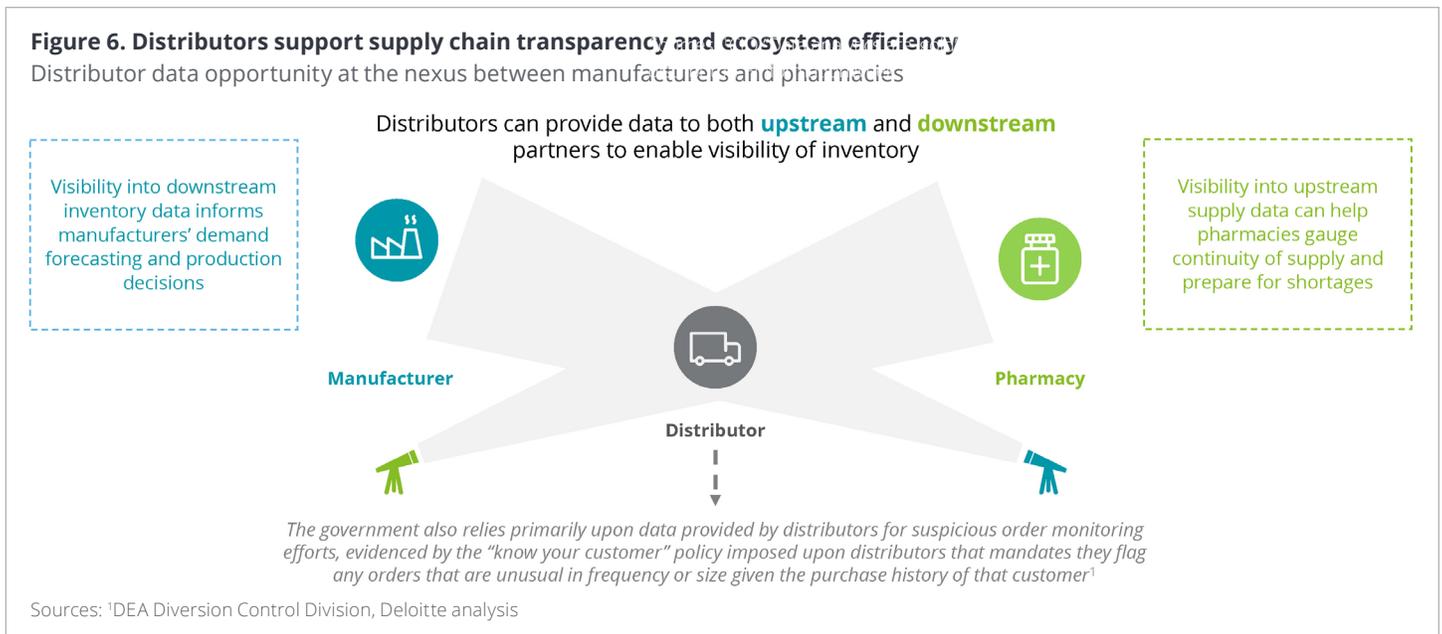
- Increased total prescriptions handled from 3.1 billion to 4.1 billion.¹⁷
- Reduced operating expenses from \$7.5 billion to \$4.6 billion—a decrease of almost 40 percent.¹⁸
- Increased efficiency (operating expenses per prescription) by cutting costs by over half—from \$2.44 to \$1.11.¹⁹

Because distributors sit at the nexus between manufacturers and pharmacies, they support ecosystem efficiency and supply chain security by providing valuable transactional data (figure 6). The visibility that distributors have today into upstream supply data has the opportunity to help their pharmacy customers gauge supply continuity, while their visibility into downstream inventory data can aid manufacturers' demand forecasting and production decisions. To highlight the important role distributor data plays in the ecosystem, the government, through its "know your customer" policy, mandates that distributors monitor their customers for the suspicious ordering of controlled substances.

Beyond operational efficiency, distributors also support the efficient flow of information and money in the pharmaceutical ecosystem. A leading example of how distributors support ecosystem efficiency beyond moving product is by managing contracts and facilitating chargebacks. Distributors manage contracts between GPOs and manufacturers, enabling GPOs to use the bargaining power of their members to earn discounts. Distributors monitor sales between these ecosystem players and facilitate the payment of chargebacks from the manufacturer in the amount of the difference between the prices negotiated by the GPOs and the wholesaler acquisition cost (WAC).

Distributor technology investments

-  A distributor implemented cloud analytics software that provided real-time updates of inventory, sales, and other customer service metrics to its sales teams and customers with the aim of reducing costs, increasing sales, and improving patient outcomes.¹
-  A distributor was named a top 100 company in the 2016 InformationWeek Elite 100 report for implementing new and more effective methods of data collection and analysis that improve speed, accuracy, and reaction time.²
-  A distributor implemented a photo-recognition platform enabling an automated verification that product totes destined for pharmacies and providers have the correct products in the correct quantities, ensuring patient safety and ecosystem efficiency.³
- 



Core benefit: Inventory management

Distributors, through their buying power and economies of scale, can maximize efficiency so that pharmacies are able to run lean operations and focus on their core competency of patient care. By consolidating, delivering, and returning orders from multiple manufacturers in totes, distributors can save pharmacies time and expense since they do not need to expend resources on warehousing or logistics activities. Further, distributors reliably deliver these totes in a timely manner so that pharmacy staff can serve customers rather than wait for and handle shipments from multiple manufacturers.

Core benefit: Financial risk management

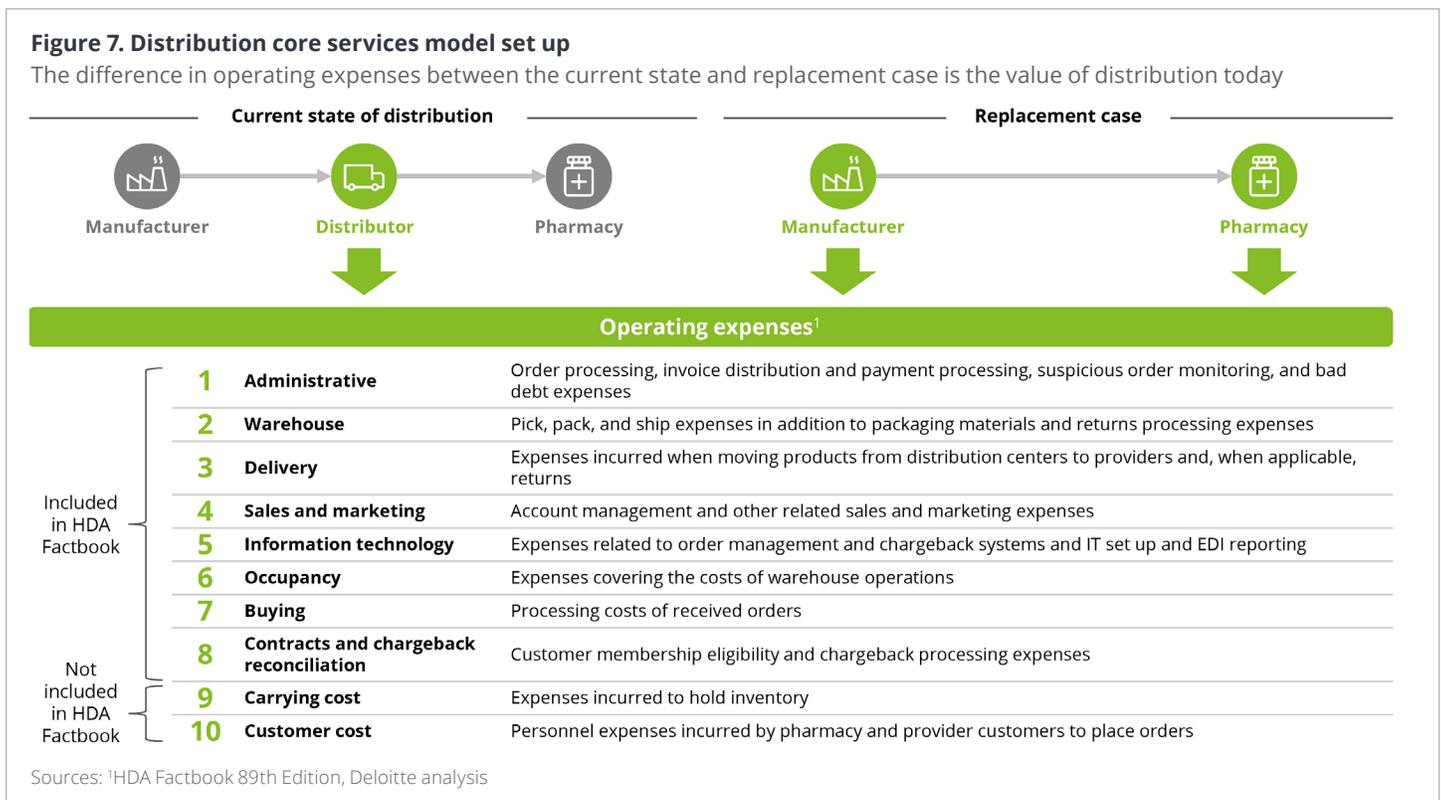
Distributors serve as a risk-bearing ecosystem intermediary by facilitating three key components of receivables management: controllable risk, uncontrollable risk, and receivables timing.

To control receivables risk, distributors perform credit checks, verify licenses, perform onsite inspections of pharmacy customers, and maintain credit default insurance. Aggregating these administrative activities among a limited set of distributors as opposed to having each manufacturer independently perform

them can reduce the cost to the ecosystem. In addition, through the strength and breadth of their mutually beneficial relationships with their pharmacy customers, distributors are better positioned than individual manufacturers to obtain payment, reducing uncontrollable receivables risk. Finally, distributors take title (legal ownership) of a manufacturer’s product upon purchase, bearing the risk of holding, transporting, and selling the inventory, and obtaining payment. Taking title can improve receivables timing, giving manufacturers the added benefit of a single, consolidated payment from a distributor rather than multiple staggered payments from customers.

Quantifying distributor core services’ value

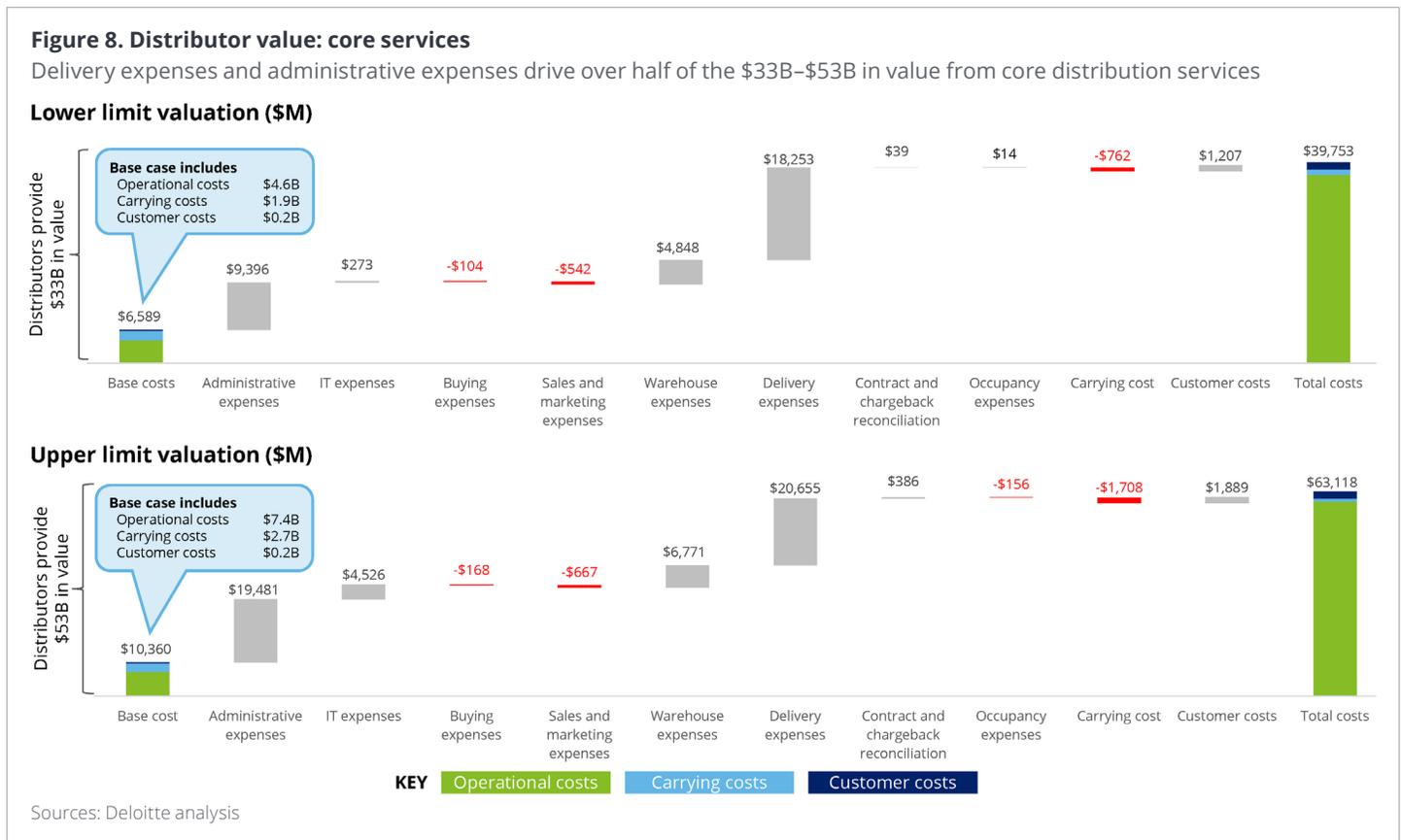
In support of this study, Deloitte performed a comprehensive analysis to quantify the value of pharmaceutical distributors’ services to the health care ecosystem. This financial model allocates costs incurred by distributors as reported by the HDA Factbook, then calculates the cost for manufacturers and customers to achieve the same level of service. Ten costs categories are calculated in the distributors’ core services model, of which eight are linked to the HDA Factbook (figure 7).



Model results show that:

- **Delivery expenses** could escalate dramatically (20x) as forward and reverse shipments would be disaggregated from warehouse-to-pharmacist bulk shipments to individual manufacturer-to-pharmacist overnight air shipments.
- **Administrative expenses** could increase due to the high fixed costs of manufacturers building out their own infrastructure and maintaining the customer management and suspicious order monitoring programs.
- **Warehouse expenses** could increase due to higher handling costs—lack of competency and scale would likely make manufacturer warehouse operations more expensive and less efficient than distributors'; and increased packaging costs—one-way shipments by manufacturers would require the purchase of additional packaging for each delivery.

The difference in operating expenses—administrative, warehouse, delivery, sales and marketing, IT, occupancy, buying, contracts and chargebacks reconciliation—between the current state of distribution (manufacturer to distributor to pharmacy) and the replacement case (manufacturer to pharmacy) is the value of distributors' core services today (figure 8). Were manufacturers to ship directly to pharmacies and maintain current service levels, most expense categories would increase, for a potential combined \$33 billion–\$53 billion impact to the system.



Value-added distributor services

Distributors offer additional programs and services beyond core distribution to both manufacturers and pharmacies that help improve their efficiency and ability to benefit patients (figure 9). Based on a filtering exercise (described in the appendix), an initial list of value-added services offered by distributors was rationalized and analyzed across four dimensions that assess distributors' differentiating opportunity; 11 services were shortlisted for further consideration and three were selected to be modeled for more in-depth analysis and discussion: independent pharmacy services, generic sourcing programs, and hub services.

Figure 9. Distributors offer additional, non-core programs and services



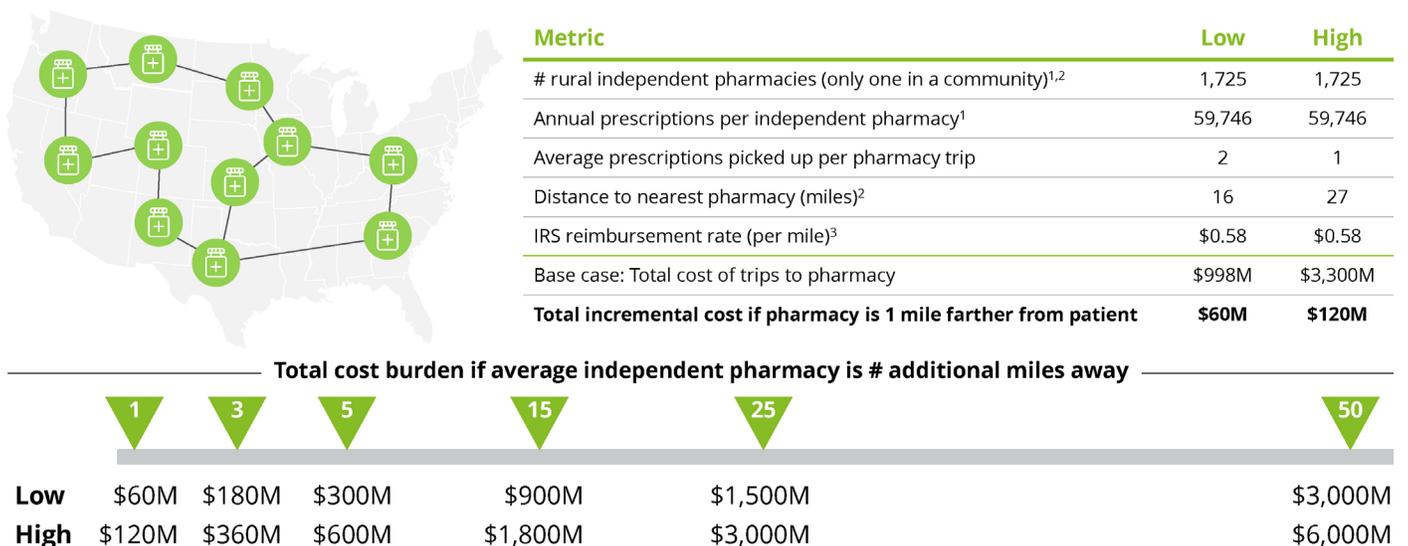
Independent pharmacy services

Distributors offer franchising programs, consulting and technology services, and the supply of over-the-counter drugs and general merchandise products upon which many independent pharmacies depend to compete and effectively serve the communities in which they operate. For example, integrated systems can enable independent pharmacies to work seamlessly with distributors to order product and check inventory, allowing pharmacists and pharmacy technicians to focus on patient care.

Keeping small, independent pharmacies viable increases patient access to over 100 million necessary prescriptions, particularly in rural areas with the most vulnerable patients and where fewer pharmacy options exist (figure 10).²⁰ Estimates indicate that for every one-mile increase in the average distance patients must travel to a rural independent pharmacy, there is an additional \$60 million–\$120 million cost burden placed on those patients.

Figure 10. Independent pharmacy support services

Distributor services provide significant cost savings to the ecosystem by enabling patient access to over 100M necessary prescriptions in remote geographies



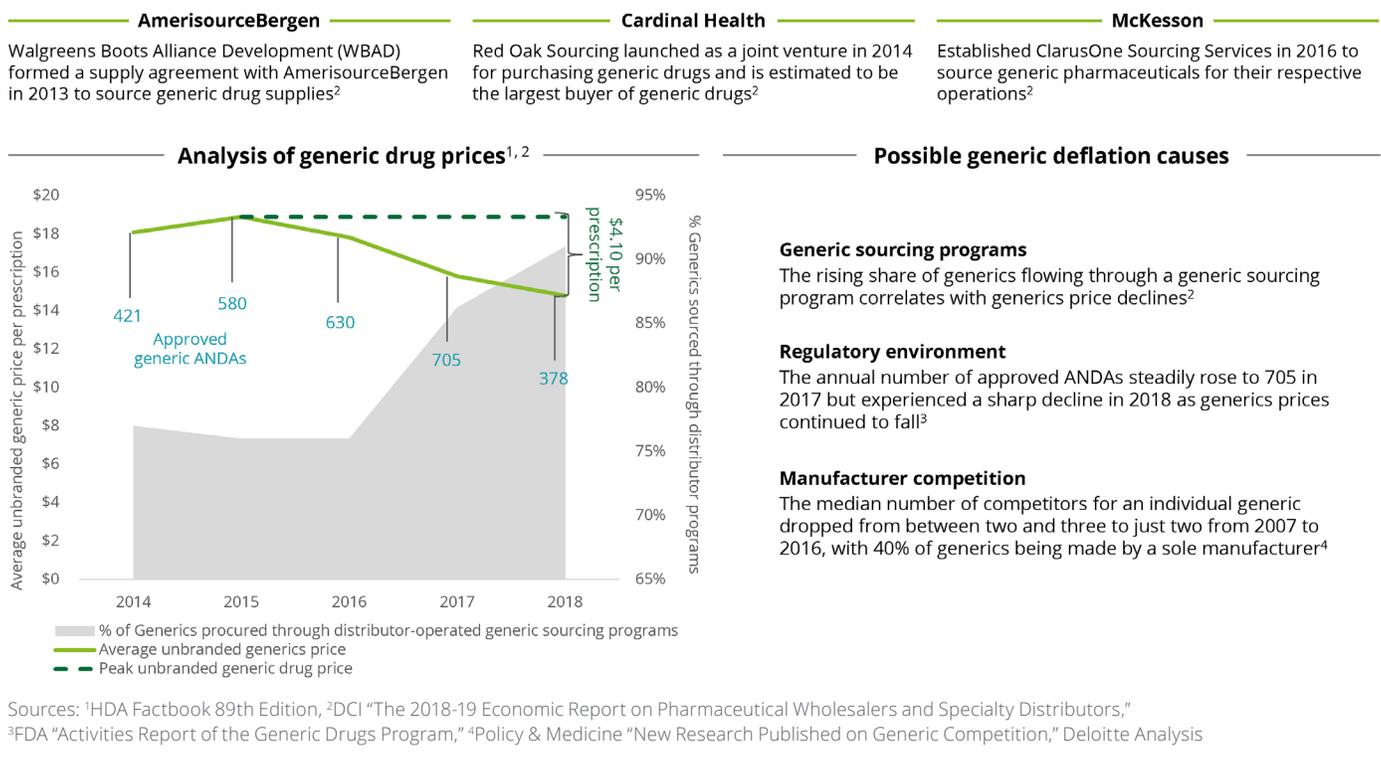
Sources: ¹NCPA Digest 2017, ²RUPRI "Update: Independently Owned Pharmacy Closures in Rural America, 2003-2018," ³IRS, Deloitte analysis

Generic sourcing programs

Distributors have invested in generic sourcing programs and formed partnerships with retail chains to aggregate their buying power (figure 11). Ninety percent of generic pharmaceuticals are procured through distributor-operated generic sourcing programs;²¹ this, combined with the growing number of approved Abbreviated New Drug Applications (ANDAs) and increased manufacturer competition, have contributed to generic drug price reductions. The US health care system would have incurred an additional \$16 billion in costs in 2018 had generic prices remained constant from 2015, raising the price of four billion generic prescriptions by roughly 30 percent.²²

Figure 11. Generic sourcing programs

Distributors aggregating their generic buying power has contributed to generic price reductions

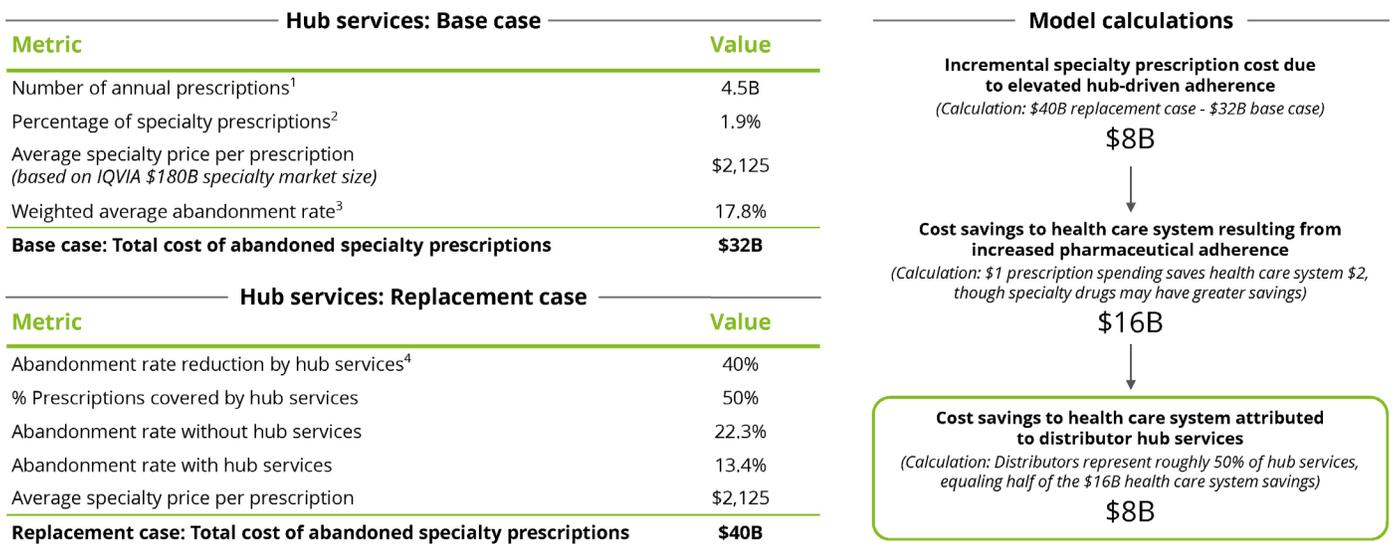


Hub services

Many distributors have established hubs, which provide a menu of services that benefit manufacturers and patients alike. Offerings may include patient and administrator education, sample and adherence program administration, benefits investigation and verification, copay support, and/or prior authorizations. Patient adherence programs alone have potentially reduced costs to the overall US health care system by as much as \$8 billion (figure 12).²³

Figure 12. Distributor hub services

Services that improve patient adherence to specialty medications have potentially reduced health care system costs by as much as \$8B

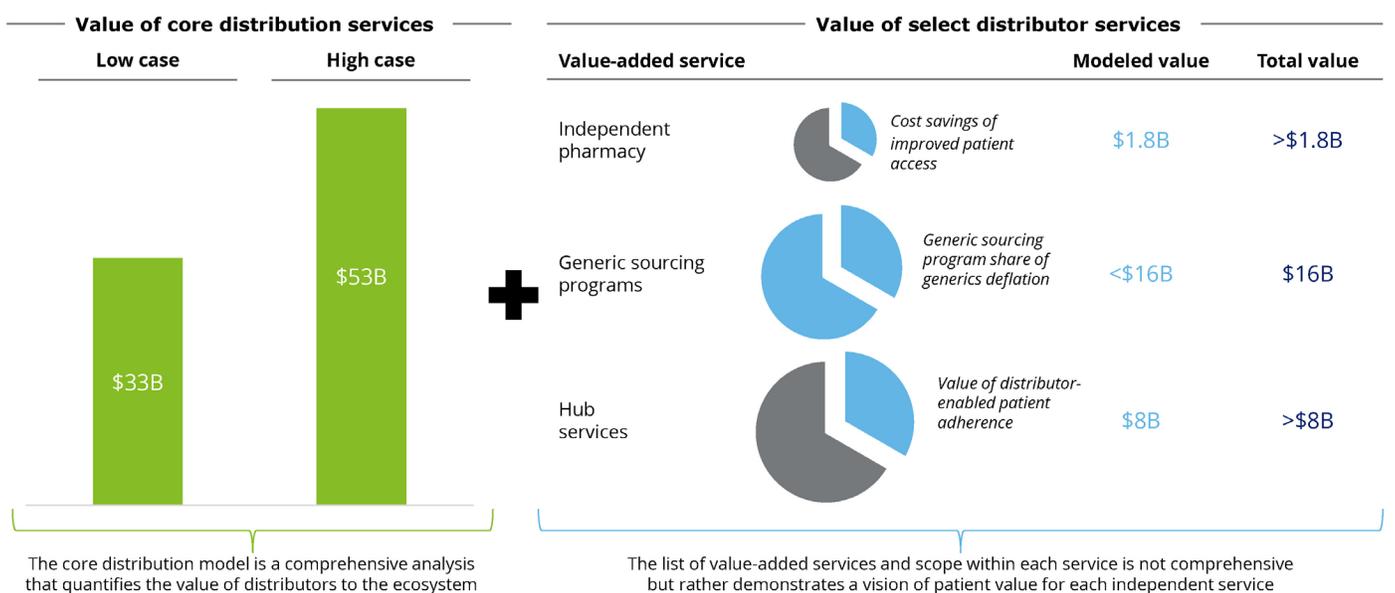


Sources: ¹HDA Factbook 89th Edition, ²IQVIA "Medicine Use and Spending in the U.S.," ³Penn LDI "Association of Patient Out-of-Pocket Costs With Prescription Abandonment and Delay in Fills of Novel Oral Anticancer Agents," ⁴Deloitte estimates

Adherence programs can create value for the health care system by preventing more costly acute interventions from abandoned prescriptions. For every 1 percent increase in specialty prescriptions that are supported by hub services, \$160 million in value is created for the health care system through cost savings.

The value of distributors' core services and select value-added services to the health care ecosystem is summarized below (figure 13).

Figure 13. Quantifying the value of distributor services



Sources: Deloitte analysis

Chapter 3:

Trends impacting distributors

Five major trends are likely to influence the pharmaceutical ecosystem's evolution over the next several years: Consolidation and integration, the emergence of personalized care, advances in technology, nontraditional competitors, and public scrutiny.

1. Consolidation and integration

Pharmaceutical industry consolidation continues to alter the power dynamics among stakeholder segments. Acquisitions, mergers, and joint ventures (JVs) are producing larger customers and suppliers with greater negotiating power; they, in turn, are better positioned to pressure distributor margins.

Horizontal consolidation to pursue scale benefits is impacting distributors as well as upstream and downstream partners. The three largest 2018 biopharma deals, which had a combined deal value of \$84 billion, were driven by large manufacturers venturing into emerging and rare disease therapies.²⁴ The three largest distributors, which already serve 90 percent of the market, continue to make strategic acquisitions to expand service offerings to players across the health care value chain.²⁵ Similarly, consolidation has resulted in a group of top-tier dispensing pharmacies which accounted for almost two-thirds of prescription dispensing revenues in 2017.²⁶

Meanwhile, **vertical integration** among ecosystem players—payor + PBM + pharmacy; distributor + GPO + PSAO; pharmacy + wholesaler + specialty pharmacy; and other combinations—continues to blur the lines between stakeholder segments along the pharmaceutical value chain. Vertical integration is shifting traditional roles from singular competencies toward integrated offerings: Individual stakeholders playing multiple roles may be able to exert greater influence over the ecosystem.

2. Emergence of personalized care

Personalized care is the outcome of two related trends that strongly focus on individualized patient treatment.

Personalized wellness is an individualized approach to holistic wellness that uses biologic information to assess an individual's risk for the development of a disease or adverse responses to treatments. **Personalized medicine** is an individualized approach to medicine that uses genetics to determine an individual's disease susceptibility, define preventive measures, and target specific therapies to reduce overall risks to health. Personalized medicine is a global industry that is projected to experience a 11 percent compound annual growth rate (CAGR) between 2017 and 2024.²⁷

The emergence of personalized care presents challenges and opportunities to the traditional pharmaceutical supply chain:

- **Broader emphasis on wellness.** As pharmaceuticals become part of a broader approach to “wellness” and not “health care,” the lines between provider and pharmacy will likely continue to blur as patients seek integrated solutions for all wellness needs. Opportunities may emerge for distributors to offer a broader suite of wellness products beyond traditional pharmaceuticals.
- **Medications for individuals, not the masses.** The supply chain will likely pivot toward pharmaceuticals produced for specific individuals (pull versus push) with a corresponding need for direct shipment to that patient. Distribution services, in turn, are likely to become faster, cheaper, and more flexible as a result of the use of electric, autonomous, and connected vehicles. For example, robot delivery services or drones are future-state possibilities that could provide same-day delivery to consumers.

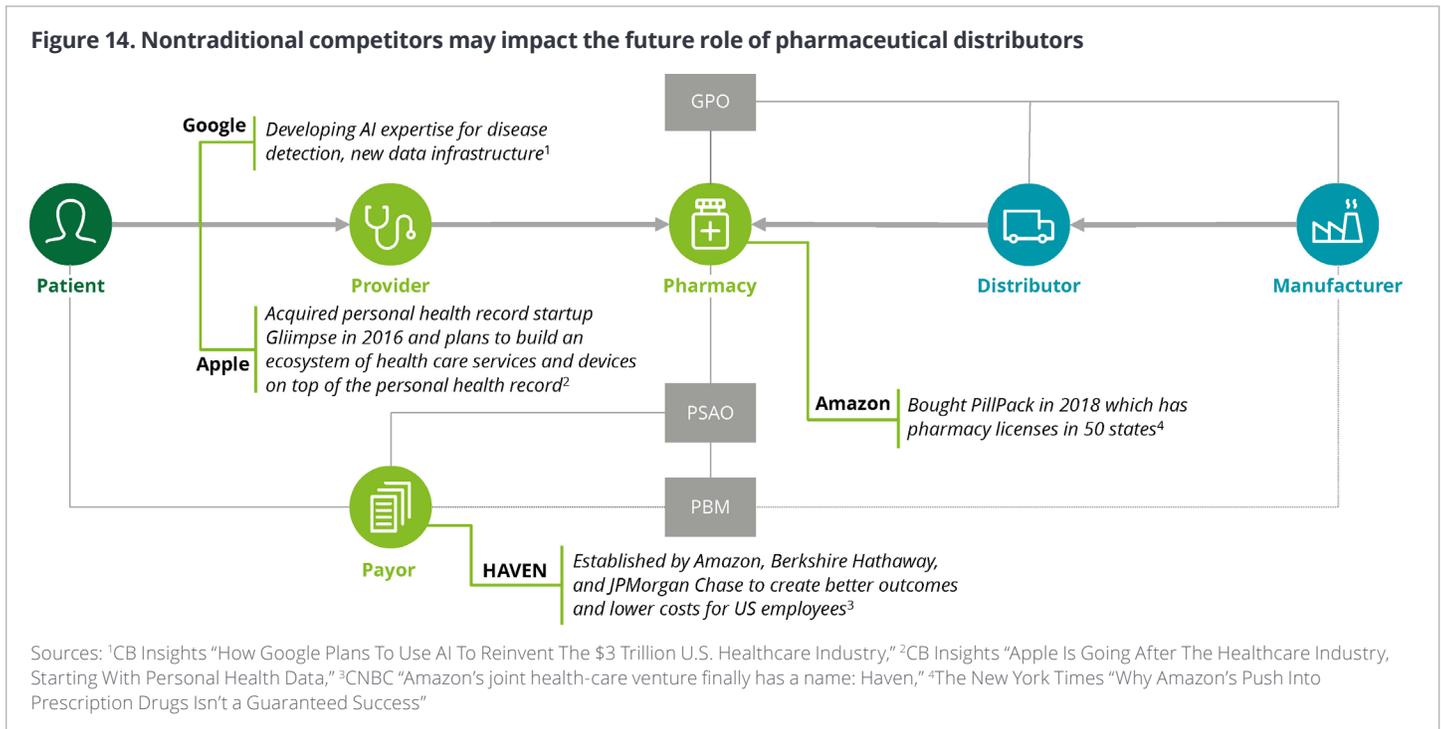
3. Advances in technology

Emerging technologies present new opportunities for pharmaceutical distributors to continue to improve performance while fulfilling their mission to support patient access.

- **Blockchain.** Blockchain technology can boost supply chain integrity and transparency by recording immutable information at every stage of the process, and by using permission rights to limit data access to trusted stakeholders. A blockchain project launched in 2017 is bringing together leading pharmaceutical manufacturers and distributors to build an industry-owned, permissioned blockchain network based on open standards and specifications.²⁸
- **Artificial intelligence (AI)/robotics.** AI and robotics capabilities have the potential to drive down warehouse operational costs and minimize human error. IT automation, natural language processing, quality control, and cybersecurity likely present the greatest opportunity for distributors to leverage these technologies.
- **Internet of Things (IoT).** Adoption of IoT technology can help distributors provide real-time updates to their pharmacy and provider customers, allowing them to spend more time providing a reliable delivery schedule. IoT technology can also help with diversion identification by applying algorithms to determine if the delivery route is no longer being followed or if there is an unexpected delay.

4. Nontraditional competitors

The entrance of nontraditional competitors into the health care industry may impact the future role of legacy pharmaceutical distributors. Over the last few years, several global, technology-savvy companies—Google, Apple,²⁹ Haven, and Amazon, among them—have made investments in areas of the ecosystem that are adjacent to distributors (figure 14). These new players present both an opportunity and a threat; distributors, in response, should consider how to adapt their business model to partner and/or compete with them.

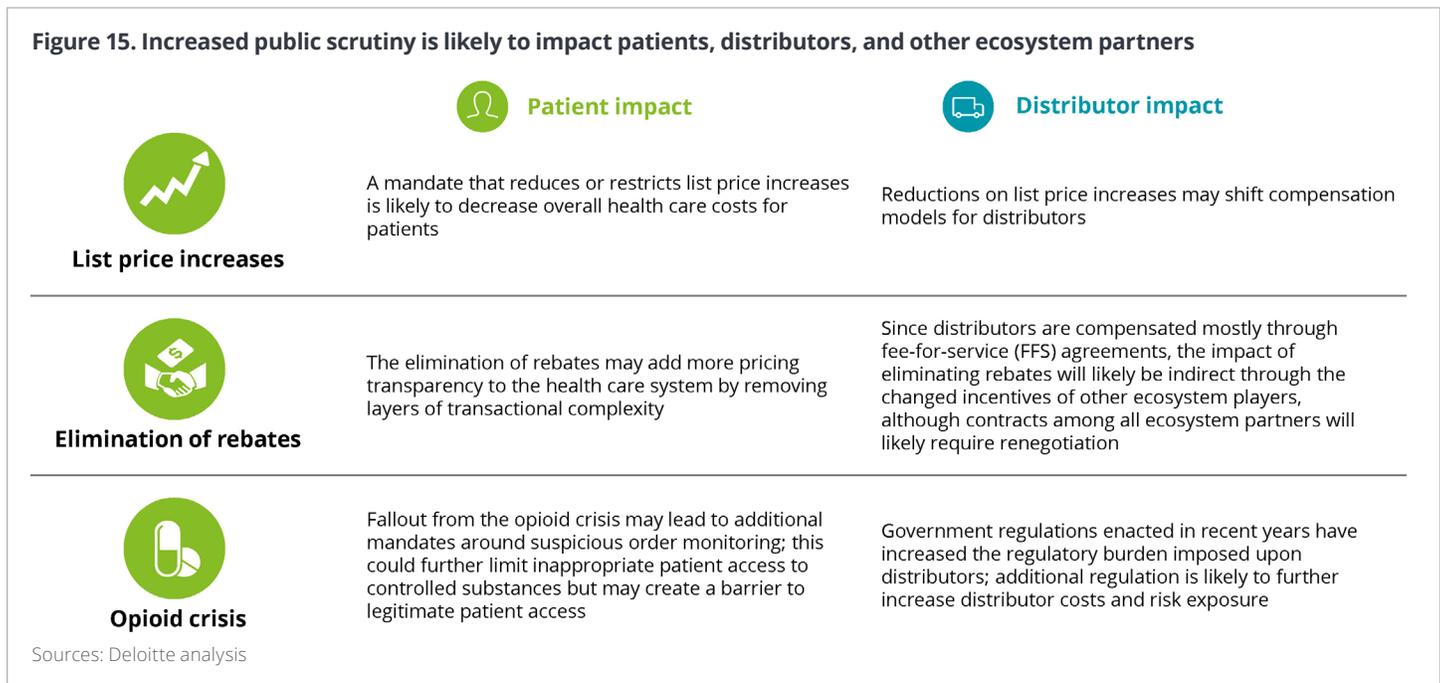


5. Public scrutiny

Prescription pharmaceutical list price increases, confusion around rebates, and the opioid crisis have generated intense public awareness and news coverage about the pharmaceutical industry. This focused attention is likely to change the industry, impacting patients, distributors, and other ecosystem players (figure 15) and forcing changes to current business and compensation models.

- Even as drug list prices have increased at a slower rate (6.9 percent in 2018 versus 11.9 percent in 2015), public and government scrutiny of drug prices remains high.³⁰ Legislation and regulation seeking to cap drug price increases by manufacturers and eliminate rebates are likely to impact the existing list-price-based wholesaler payments system.
- The lack of transparency around rebates and concerns about benefits not trickling down to consumers may result in legislation or regulation that controls pricing models.
- Future legislation and regulation are expected to require investments to safeguard the supply chain. For example, fallout from the opioid crisis means all ecosystem players will likely face increased attention and scrutiny of their business practices. Specifically focused on distributors, suspicious order monitoring regulation is likely to require additional investment in systems and processes to maintain compliance; this will be a burden on all distributors but most challenging for smaller ones.

Figure 15. Increased public scrutiny is likely to impact patients, distributors, and other ecosystem partners



Chapter 4: The future role of distributors

The continued growth of the specialty pharmaceuticals market, the continued rise of value-added services, and—as examined earlier—potential legislation to regulate pharmaceutical pricing will likely alter distributors’ future business and compensation models as they seek to enhance and expand traditional revenue sources.

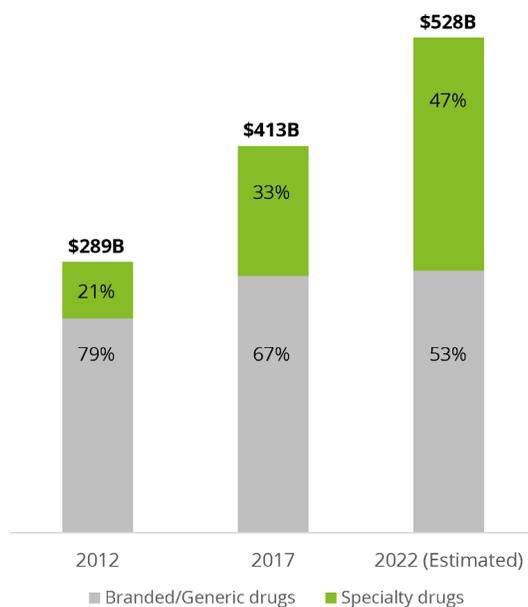
Growth of specialty pharmaceuticals

The pharmaceutical industry includes specialty products in addition to traditional branded and generic drugs. Specialty drugs are generally distinguished by higher prices, smaller patient populations, and narrow distribution networks. Their share of pharmacy revenue is anticipated to grow dramatically by 2022 (figure 16).

Although specialty products may require different handling methods and involve higher credit risk, full-line distributors’ increasing focus on blended service offerings (branded, generic, and specialty drugs) presents an opportunity to serve new customers. Also, traditional list-price-based payment models may capture revenue disproportionate to the expenses incurred; however, as specialty drug sales rise, pressure on current distributor buy-side and sell-side compensation models is likely to increase. Finally, as more providers establish in-house pharmacies and as pharmacies increase the presence of provider services, distributors’ ability to offer both full-line and specialty products helps add efficiency to the ecosystem by consolidating orders rather than having separate distributors.

Figure 16. Specialty products’ share of pharmacy revenue, 2012–2022

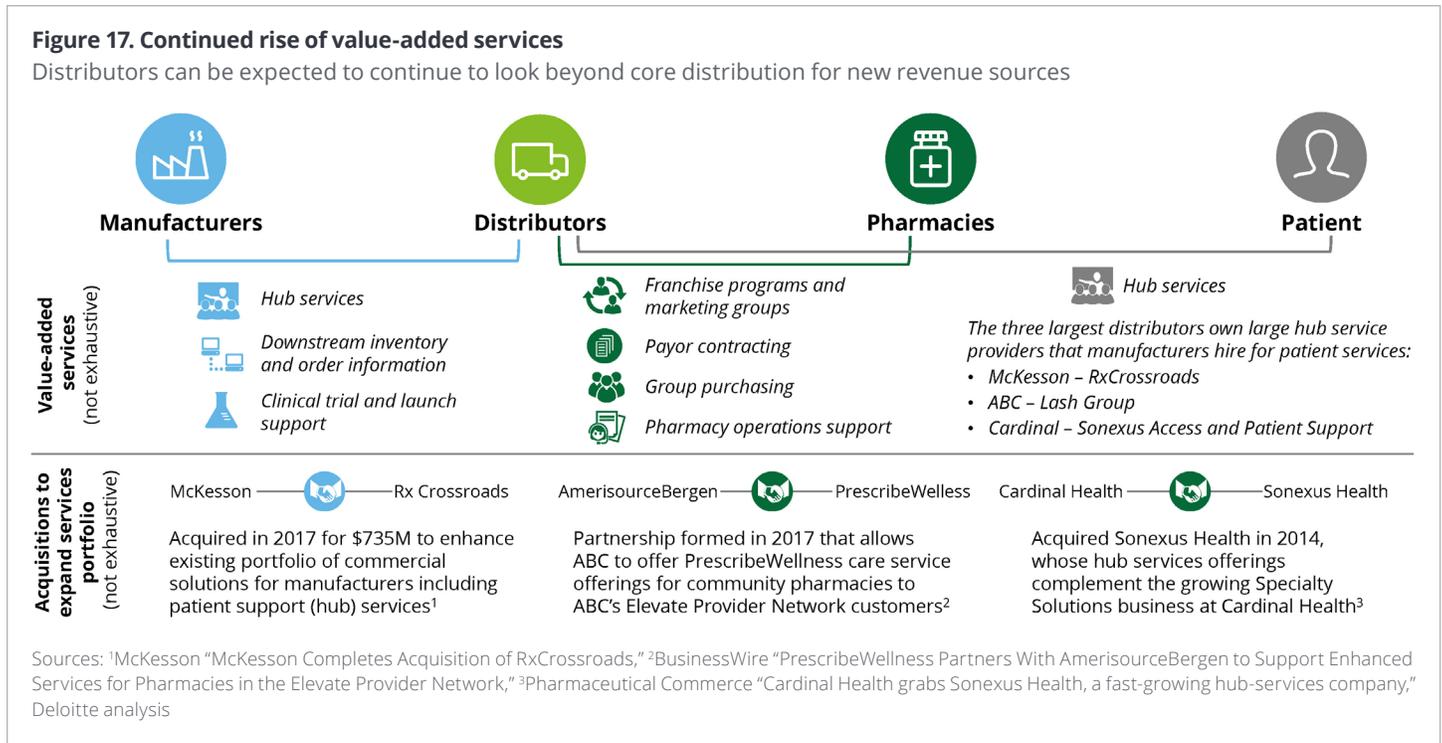
Share of pharmacy revenue by prescription drug type¹



Sources: ¹DCI “The 2018-19 Economic Report on Pharmaceutical Wholesalers and Specialty Distributors,” Deloitte analysis

Continued rise of value-added services

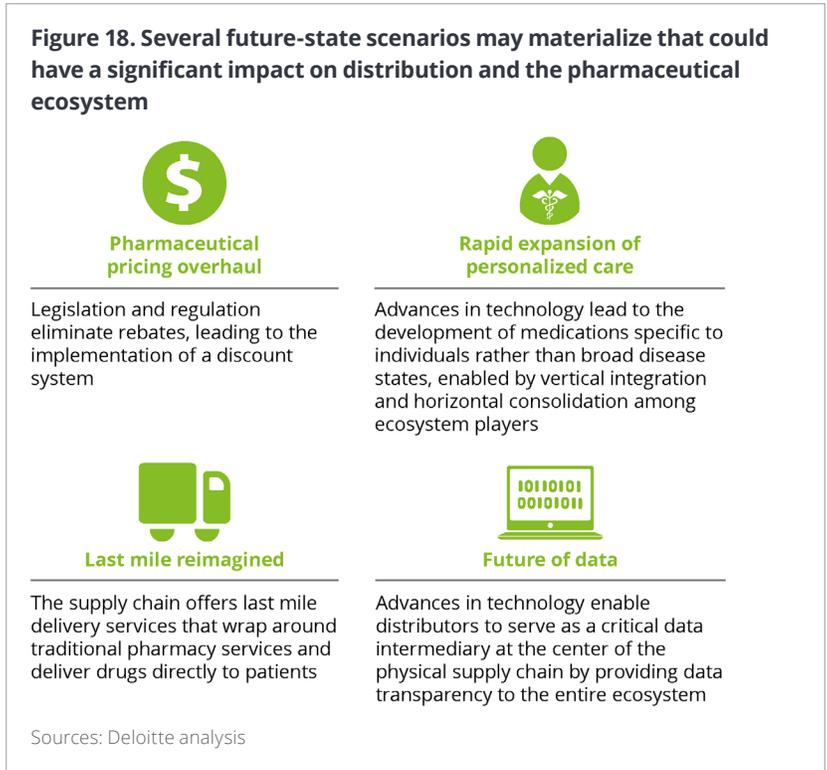
Distributors are likely to continue pursuing more direct-to-patient offerings even as they continue to expand their portfolio of value-added services for manufacturers and providers. Acquisitions are fueling much of the expansion in this area (figure 17).



Another potential growth engine for distributors is offering additional expanded data access and insights as a service. Positioned at the center of the supply chain, distributors have access to data from both upstream and downstream partners. Distributors could leverage this position and, similar to retail pioneers, build or acquire enhanced data capabilities that can help them develop a deeper customer understanding and meaningful insights to increase efficiency, drive revenue growth, and benefit the health care system at large.

Modeling future-state scenarios

To assist distributors in planning and developing future-state business models, we explore four near-term scenarios that could have a significant impact on distribution specifically and the pharmaceutical ecosystem as a whole (figure 18).



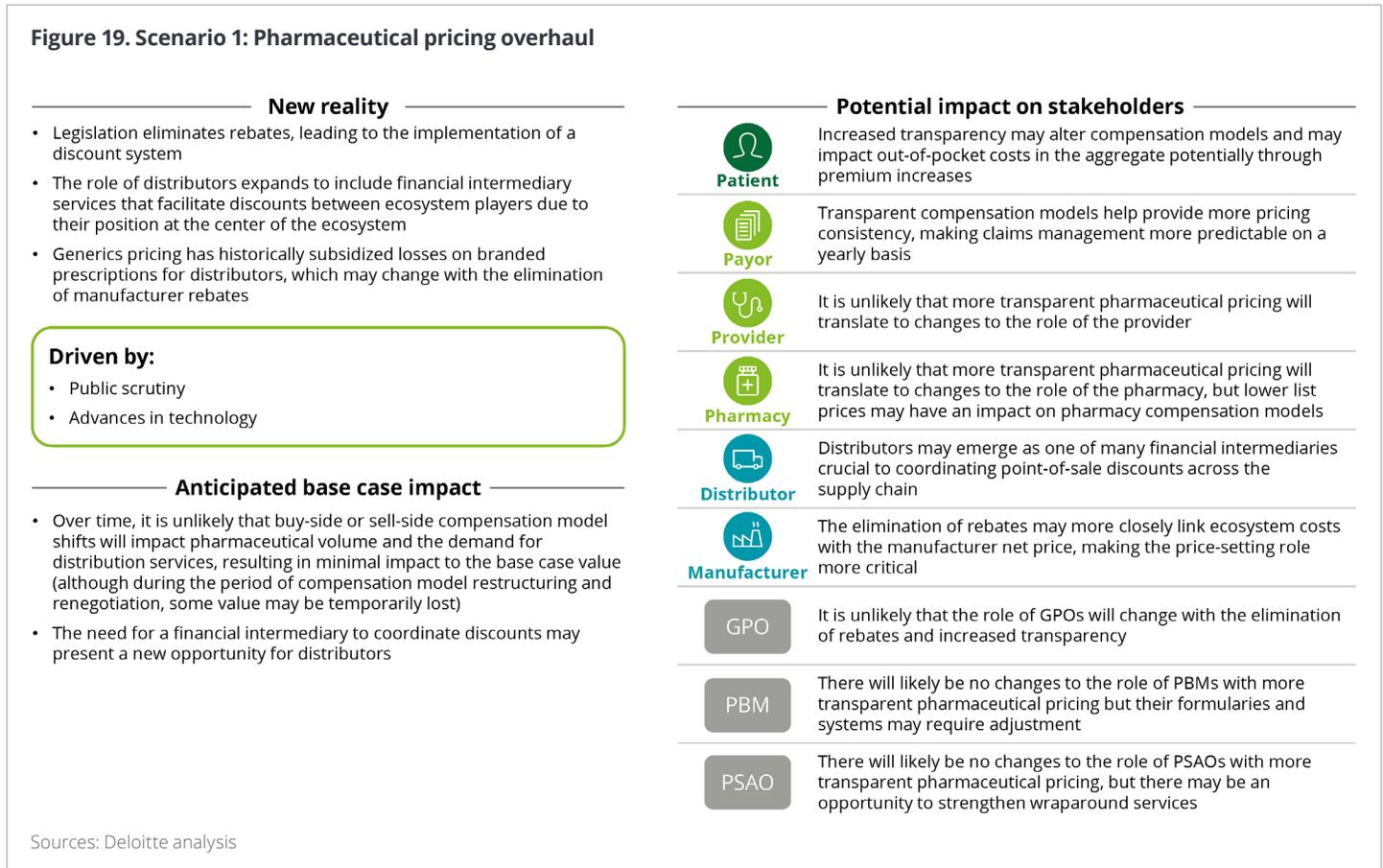
 **What is a scenario?**

A potential future-state edge case that describes the potential impact of one or more of the five major trends that are likely to influence the pharmaceutical ecosystem's evolution over the next several years:

- Consolidation and integration
- Emergence of personalized care
- Advances in technology
- Nontraditional competitors
- Public scrutiny

Scenario 1: Pharmaceutical pricing overhaul

Legislation or regulation eliminating rebates would likely transform industry compensation models and contractual arrangements between ecosystem players (figure 19).

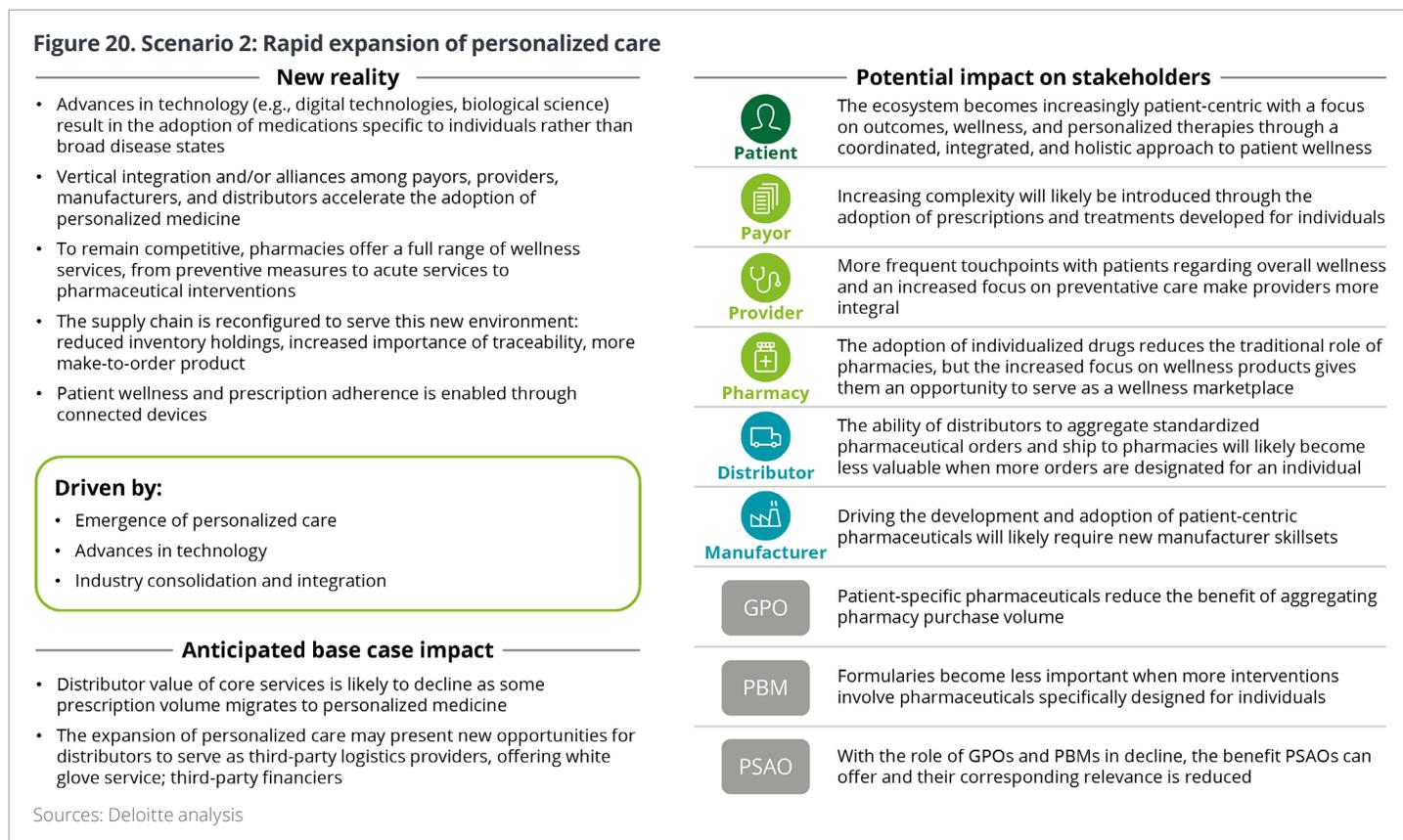


Potential changes to compensation models and contractual arrangements between ecosystem players may present an opportunity for distributors to expand their role as industry intermediary. Distributors should consider the following ways to adapt to the new reality:

- Define the role distributors could play in the new discount system that replaces the current rebate structure, finding unique ways to add value to ecosystem partners due to distributors' position at the center of the value chain.
- Invest in digital technologies to better position distributors to participate in the emerging opportunities to serve as the financial intermediary.
- Realign compensation agreements to better maintain a balance among branded, specialty, and generic drugs, eliminating the subsidization of select classes of drugs.

Scenario 2: Rapid expansion of personalized care

A scenario in which personalized care replaces medications aimed at broad disease states will likely have a profound impact on distributors and the health care ecosystem broadly (figure 20).

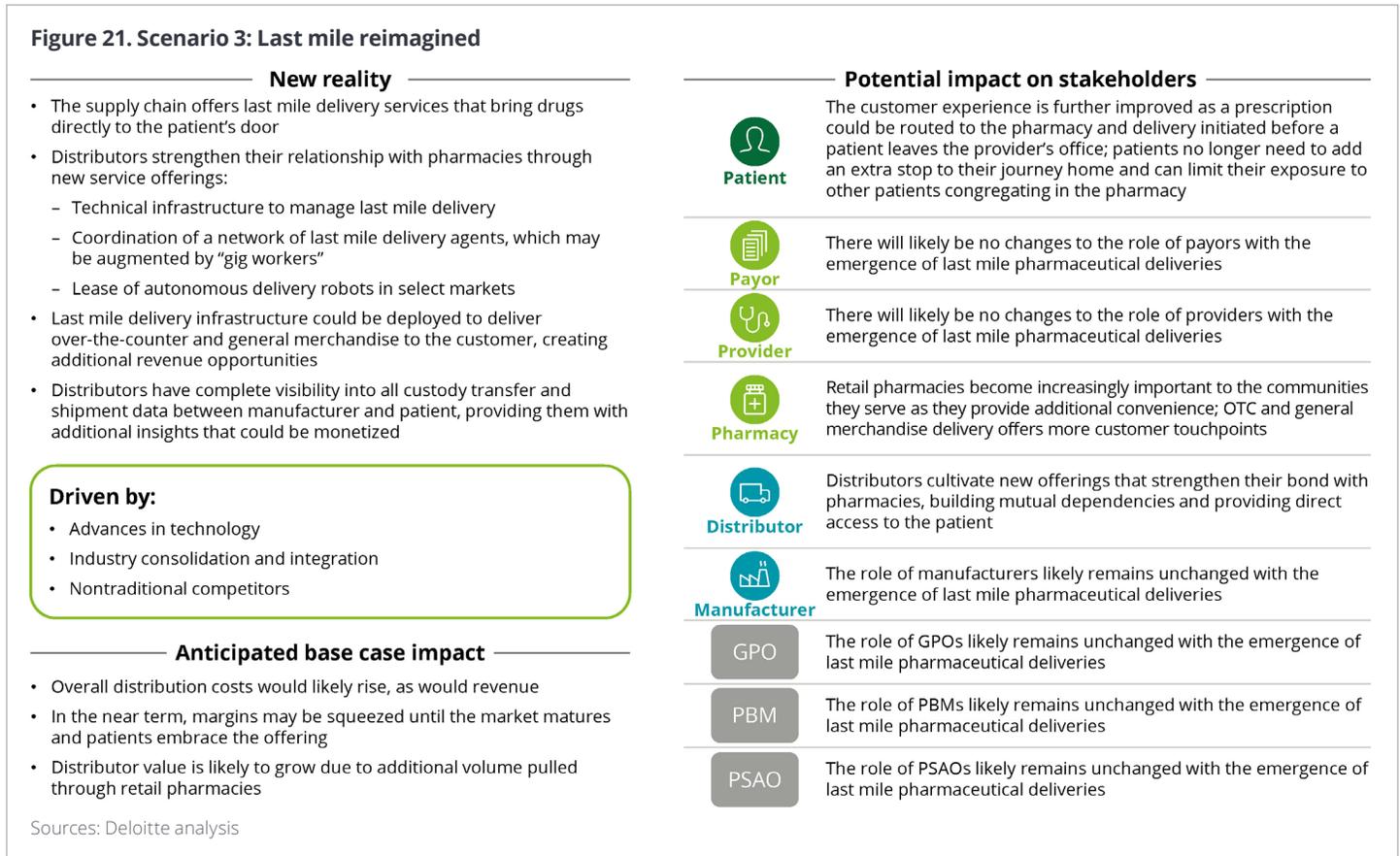


The rise of personalized care threatens the relevance of distributors' core services, but there are several opportunities to establish a key role in this new reality:

- Consider further investments in value-added services (e.g., hub services, data management solutions) that distributors are uniquely positioned to offer in their role as the nexus between disaggregated markets.
- Assess warehouse network footprints to account for the ongoing shift toward personalized medicine. Build flexibility and proactively plan now to avoid excess capacity in the future. Alternately, proactively plan to repurpose potential excess capacity for the distribution of synergistic products.
- Evaluate partnerships within the ecosystem to remain competitive as other players pursue vertical integration and horizontal consolidation (e.g., partnerships with providers to offer patient management services, partnerships with e-commerce platforms to offer direct-to-patient solutions).
- Evaluate opportunities to serve as third-party financiers and logistics providers to emerging cell and gene therapy manufacturers.
- Pursue opportunities to provide traceability solutions for patients that allow them to observe the journey of their medications and receive real-time updates, providing visibility into anticipated delivery and giving patients confidence in product integrity.
- Explore the development of last mile delivery capabilities to utilize current distribution competency in service of patient-specific prescriptions.

Scenario 3: Last mile reimaged

Last mile delivery services may emerge that rapidly deliver drugs directly to patients, changing the patient relationship with their pharmacy (figure 21).

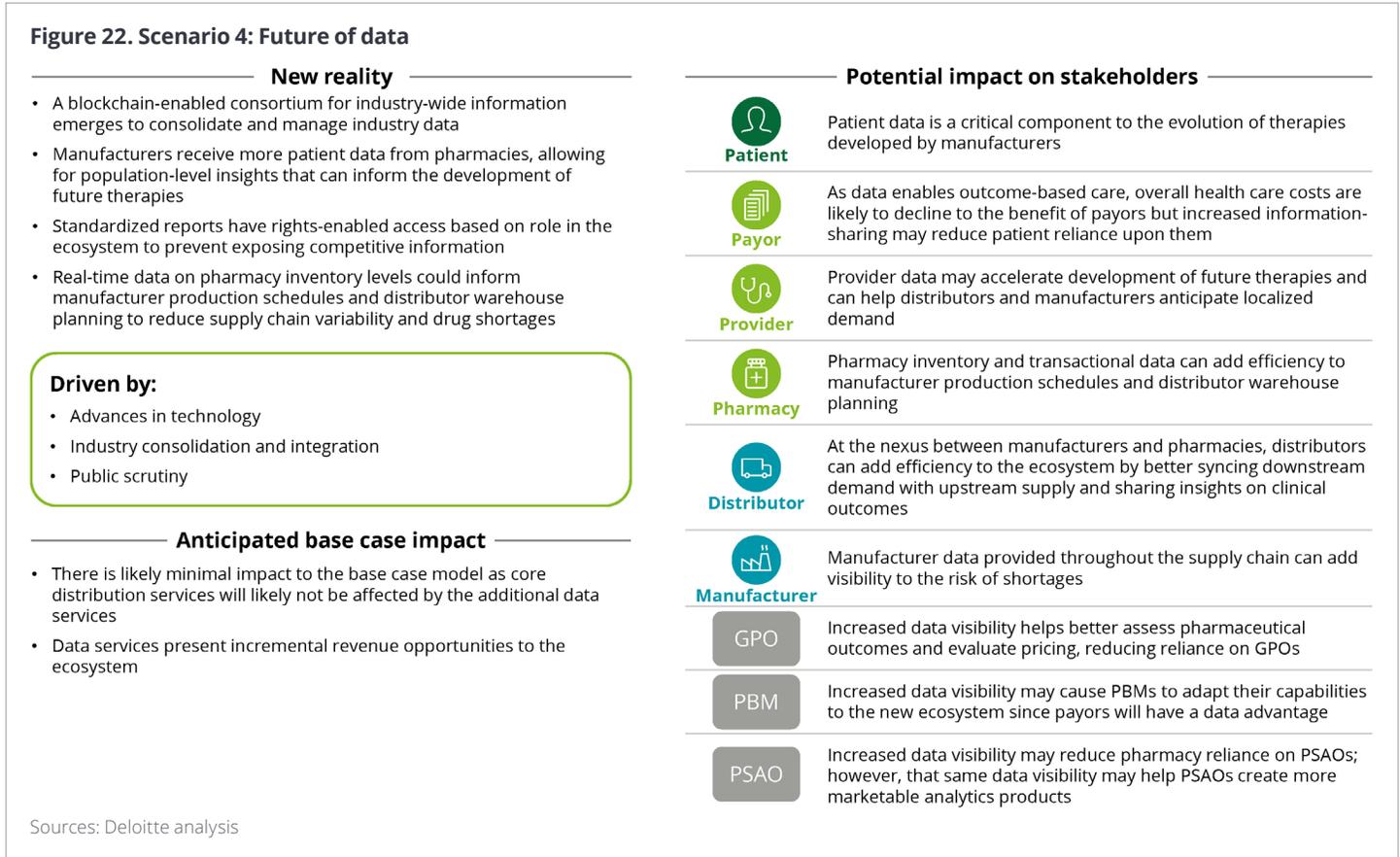


Last mile delivery services present new opportunities for distributors to deploy their logistics capabilities in the service of pharmacies and patients alike. Distributors should consider the following ways to adapt to the new reality:

- Invest in pilot programs to prove the concept in select representative markets.
- Develop or procure technology solutions to deliver a last mile capability. Consider the needs of prescribers, pharmacies, and patients (e.g., patients may want visibility into order status and to have the ability to add an over-the-counter medication and general merchandise to their prescription delivery).
- Evaluate opportunities to leverage existing courier networks and augment capacity through crowdsourced solutions (e.g., ridesharing services).
- Build or procure autonomous delivery robots to automate delivery in applicable markets. Design pricing models; evaluate options including leases to pharmacies and revenue-sharing.
- Determine the appropriate investment and controls required by a new patient-facing role (e.g., data security, patient data privacy).
- Explore opportunities to productize an expanded dataset that now extends to the customer.

Scenario 4: Future of data

Distributors collecting valuable transaction and patient data will likely have a significant impact on both distributors and the ecosystem as a whole (figure 22).



Emerging technologies that capture and analyze data present an opportunity for distributors to serve a critical role in the ecosystem as data intermediary. Distributors should consider the following ways to adapt to the new reality:

- Evaluate partnerships with technology vendors that will provide the infrastructure needed to develop a data consortium.
- Address the data access rights for regulators and each ecosystem participant that will maximize efficiency but not compromise confidentiality or competitive advantage.
- Consider the roles of ecosystem stakeholders in any resulting data consortiums.
- Conduct voice of the customer studies with upstream and downstream players to understand what data elements have the highest value.

Conclusion

This report's quantitative analysis clearly illustrates the value of distributors in the US health care industry—and their contributions extend well beyond cost considerations. By providing a secure and efficient pharmaceutical supply chain, distributors promote patient access while continuing to expand programs and services that provide additional value. Distributors will likely continue to evolve to address marketplace challenges and opportunities and to meet the needs of manufacturers, providers, and the patients they serve.

Appendix:

Glossary

Term	Definition
Artificial intelligence (AI)	A broad field of science, encompassing not only computer science but also psychology, philosophy, linguistics and other disciplines, concerned with empowering computers to perform tasks that would normally require human intelligence
Blockchain	A distributed, decentralized, public ledger that records transactions in a series of linked blocks
Branded pharmaceuticals	Manufactured by a company that holds exclusive rights granted by a patent to produce that pharmaceutical; there are no direct competitors to this pharmaceutical for the useful life of the patent
Core services	The inventory management, financial management and pick, pack, and ship services offered by distributors
Direct-to-store model	Distributors are responsible for delivery directly to each of the pharmacy's or provider's stores, bypassing the customer's warehouses, if they exist
Distributor	Provides patients with timely and convenient access to safe prescription pharmaceuticals by purchasing from a multitude of manufacturers, ensuring product is warehoused and transported appropriately to myriad dispensing points, and maintaining compliance with federal and state regulations
Generic pharmaceuticals	Often produced by several companies since they are manufactured after the exclusive patent rights granted to the original manufacturer have expired; there can be high levels of competition in this segment
Generic sourcing program	Arrangements between distributors and retail pharmacies that aggregate purchasing volume of generic pharmaceuticals to achieve cost savings
Group purchasing organization (GPO)	An entity created to leverage the purchasing power of a group of businesses to obtain discounts from vendors through collective buying power
Health care ecosystem	Refers to the multitude of players that serve patients, either directly or indirectly, by enabling access to care or pharmaceuticals
Hub services	Services provided by pharmaceutical manufacturers, distributors, and/or other entities that support a patient's access and adherence to specialty pharmaceuticals; services may include patient and administrator education, sample and adherence program administration, benefits investigation and verification, copay support, and/or prior authorizations
Independent pharmacy	Pharmacies owned and operated by independent pharmacists, not large retail chains
Internet of things (IoT)	Internet-enabled connections between sensors allowing for the transmission and receipt of data
List price	Price charged by pharmaceutical manufacturers to distributors or other direct purchasers, absent of any discounts

Term	Definition
Manufacturer	Brings next-generation, branded, and generic therapies to market to address patient needs and provides supply continuity to support ongoing treatment within the bounds of a highly regulated development and production environment
Payor	Offers risk coverage to its members by collecting regular payments from members and employer programs (or the government in the case of Medicare and Medicaid) and using that revenue to cover members in the event they have a medical requirement
Pharmacy benefit manager (PBM)	A company under contract with managed care organizations, self-insured companies, and government programs to handle pharmacy network management, pharmaceutical use review, and outcome and disease management, in addition to filling prescriptions by mail order as part of corporate health insurance plans
Personalized medicine	Individualized approach to medicine that uses genetics to determine an individual's disease susceptibility, define preventive measures, and target specific therapies to stimulate wellness for individual patients
Personalized wellness	Individualized approach to holistic wellness that uses biologic information to assess risks for the development of a disease or adverse responses to treatments
Pharmacy	Primary role is dispensing pharmaceuticals and more broadly managing the patient's care (occasionally through services similar to those offered by providers)
Provider	Treats patient conditions through a variety of methods, often prescribing pharmaceuticals to help manage their symptoms and conditions (occasionally providers also dispense pharmaceuticals)
Pharmacy services administration organization (PSAO)	Enables pharmacies, particularly smaller independent pharmacies, through the provision of tools, systems, and consulting services and contract negotiation with PBMs and payors, to provide patient access to pharmaceuticals
Rebate	Direct payment from pharmaceutical manufacturers to other ecosystem players to incent the purchase of their pharmaceuticals
Self-warehousing model	Distributors are responsible for delivery to the pharmacy's or provider's warehouse; the customer then distributes to its individual stores
Specialty pharmaceuticals	For the purposes of this report, refers to drugs designed to treat relatively costly medical issues incurred by a small portion of the population
Tote	Reusable bags that contain products from several manufacturers and are shipped from distributors to pharmacies and providers (and then the tote, either empty or with returnable products, is picked up by the distributor on the following delivery date)
Value-added services	Services not included in core distribution that are offered by distributors to other ecosystem players

Appendix: Methodology

This overview explains the methodology and assumptions for the core distribution model, value-added services, and future scenarios.

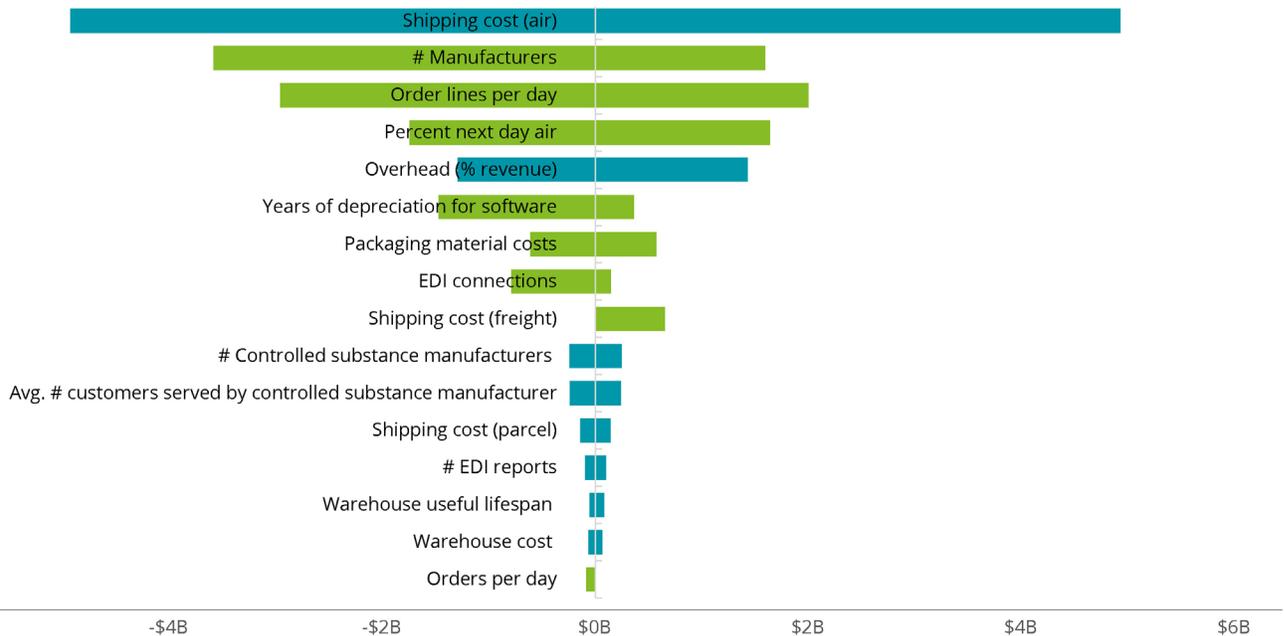
Core distribution methodology

Sensitivity analysis

The key assumptions that drove the financial model results have varying degrees of sensitivity, which should be considered when interpreting the results.

Figure 23. Methodology: Core distribution services sensitivity analysis

Sensitivity analysis of key assumptions¹



Key:

- Green bars denote assumptions where low- and high-case values were used in sensitivity analysis
- Blue bars denote assumptions that have only a singular value; these were adjusted 20% below (low-case) and 20% above (high-case) for this analysis

Sources: ¹HDA Factbook 89th Edition, Deloitte analysis

Assumptions

The financial model is driven by core assumptions; most importantly the model assumes that each base case order line transforms into an individual order, similar to the 2011 model.

Figure 24. Methodology: Core distribution services assumptions

Assumption	Value	Explanation	Sources
Replacement lines per order	8.9	The average order contains under nine lines (each line is 11% of an order); given that two of the leading generics manufacturers supply only 14% and 7% of prescriptions each, it is assumed that each order would be separated into 8.9 orders as dispensers source their needs from individual manufacturers	HDA Factbook 89th Edition
Shipping cost (Next-day air)	\$19.11	UPS 10K average revenue per next-day air shipment	2018 UPS 10K
# Manufacturers	388 – 1,070	Low includes large-cap and mid-cap manufacturers High extends to include small-cap	EvaluatePharma
Order lines per day	4.8M – 5.1M	Segments distributors into three groups and calculates order lines per day based on daily orders per distribution center for each segment	HDA Survey
% Next-day air	70.3% – 77.4%	Assumes clinics, long-term care facilities, and physicians' offices can be served via parcel services and chain warehouses and mail order pharmacies can be served via freight services	HDA Factbook 89th Edition
Overhead (% revenue)	20%	Benchmarks comparable companies that reflect a mix of pharmaceutical manufacturers, top health care distributors, other industry distributors, and third-party logistics providers	Cap IQ
Years of software depreciation	2 – 5	Utilizes Deloitte SMA assumptions to determine high and low case values	Deloitte SMA
Packaging material costs	\$2.12 – \$3.09	Utilizes Deloitte SMA assumptions to determine high and low case values	Deloitte SMA
# EDI connections	8,214 – 9,774	Conservative estimate of 5% of the total ship-to points in US	HDA Factbook 89th Edition
Shipping cost (freight)	\$8.19	UPS 10K average revenue per ground shipment	2018 UPS 10K
Avg. # controlled substances manufacturers	367	Derived based upon DEA registrations	DEA Diversion Control Division: Controlled Substances Registrants
Avg. # customers served by controlled substances manufacturer	37,105	Derived based upon DEA registrations	DEA Diversion Control Division: Controlled Substances Registrants
Shipping cost (parcel)	\$8.19	UPS 10K average revenue per ground shipment	2018 UPS 10K
# EDI reports	2	Utilizes Deloitte SMA assumptions to determine value	Deloitte SMA
Warehouse useful lifespan (years)	7	Utilizes Deloitte SMA assumptions to determine value	Deloitte SMA
Warehouse cost	\$40M	Benchmark based on a distributor's recent 350,000-square-foot warehouse purchase	"AmerisourceBergen plans \$40 million 'Amazon-like' distribution center in metro Atlanta", Bizjournals, Feb 2017
Total orders per year	1.2B – 1.3B	Derived from average orders per day per distribution center, average order lines per day per distribution center, and analysis of existing distribution centers	HDA Factbook 89th Edition

Sources: Deloitte analysis

Assumption impact

Each core assumption has an impact on various elements of the financial model; this is important in understanding the model's sensitivity to changes in key variables.

Figure 25. Methodology: Core distribution services assumption impact

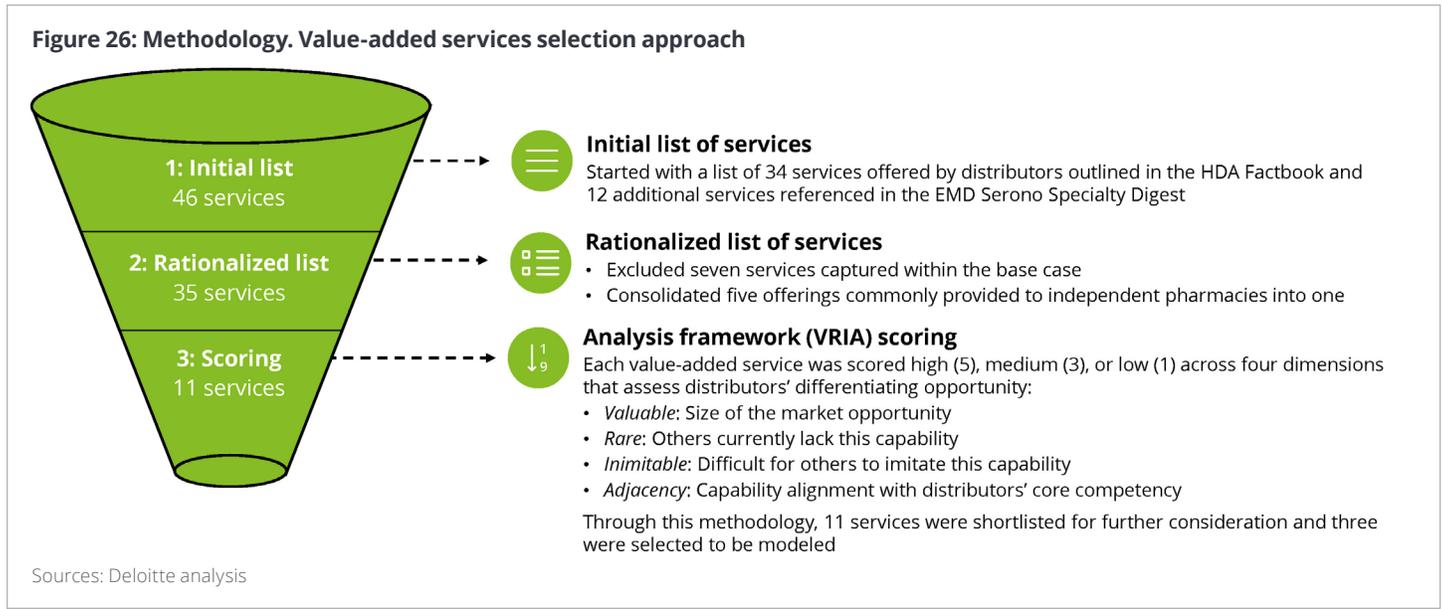
Variable	Administrative	Warehouse	Delivery	Sales and marketing	Information technology	Occupancy	Buying	Contacts and chargeback reconciliation	Carrying cost	Customer cost
Avg. # controlled substances manufacturers	●									
Avg. # customers served by controlled substances manufacturer	●									
# EDI connections					●					
# Manufacturers				●	●			●		
Replacement lines per order										
Shipping cost (freight)			●							
Shipping cost (next-day air)			●							
Shipping cost (parcel)			●							
Total orders per year			●							●
Order lines per day	●	●	●					●		●
% next-day air			●		●					
Overhead (% revenue)	●	●			●			●		●
Years of software depreciation										
Packaging material costs		●								
# EDI reports		●								
Warehouse useful lifespan (years)						●				
Warehouse cost						●				

Sources: Deloitte analysis

Value-added services methodology

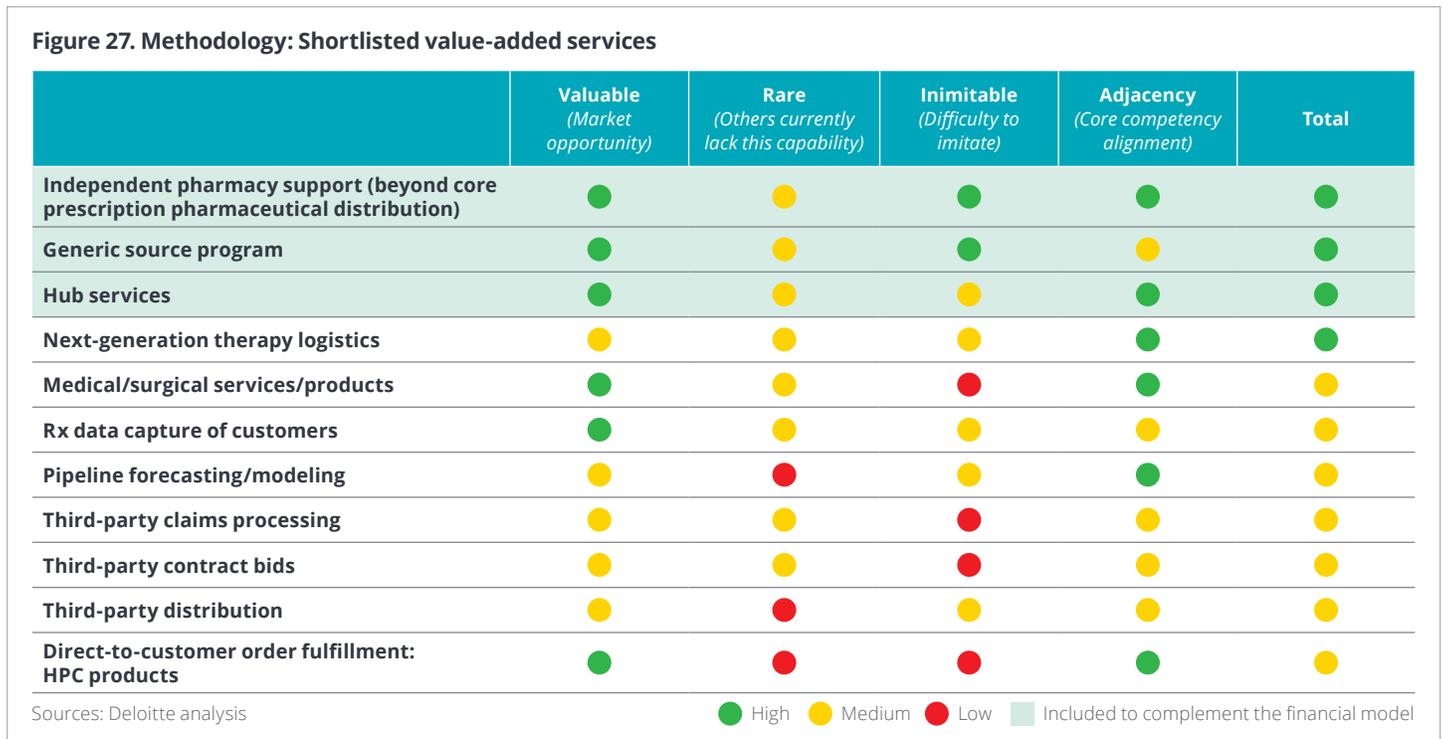
Selection approach

We utilized a three-step approach to identify which value-added services to quantify, considering three factors.



Shortlisted value-added services

In addition to core distribution, Deloitte valued three additional services that distributors offer. While distributors provide many complementary offerings, these three are among the most common and most directly impact patients.



Quantification approach for selected value-added services

Each of the three selected value-added services was analyzed using a tailored approach that quantified the benefit distributors provide to patients, in accordance with the figure below.

Figure 28. Methodology: Quantification approach for selected value-added services

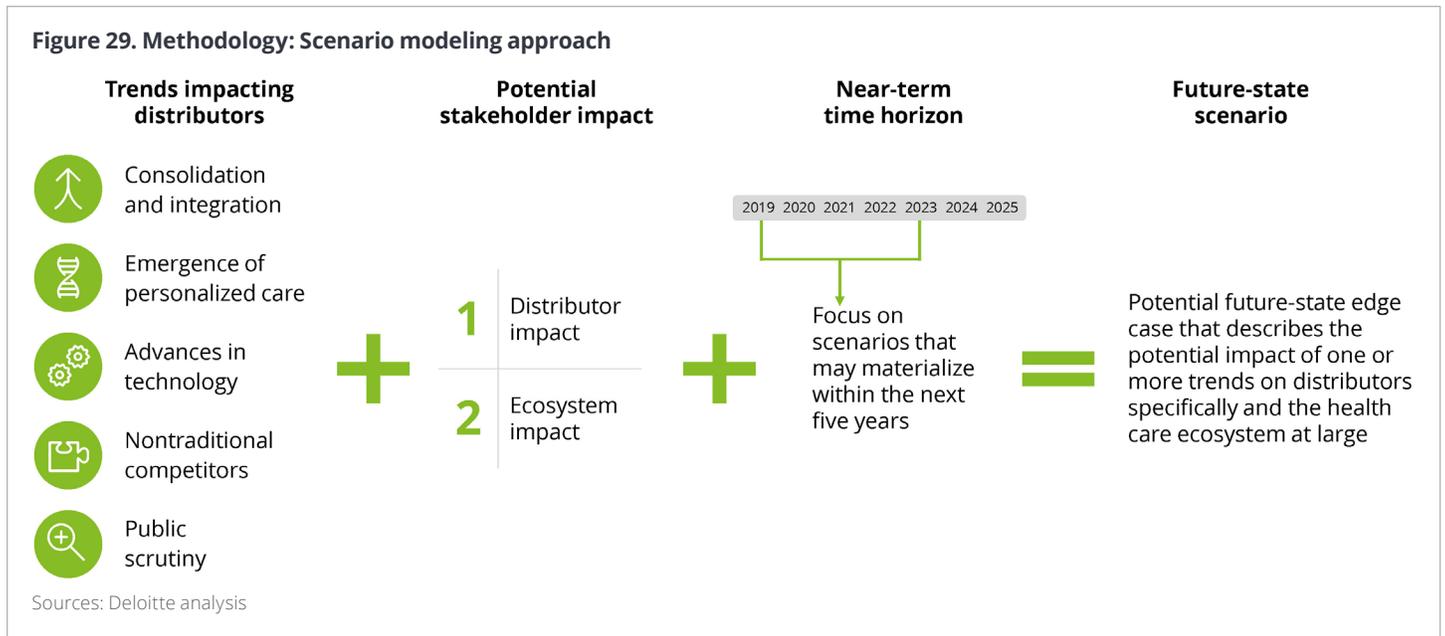


The quantification of value-added services is reviewed in figure 14. In this figure, the modeled value is the quantification of the selected distributor services that were included in the model and discussed in the preceding sections. The total value reflects the upper bound for the value that distributors create for each of these services. Both the independent pharmacy and hub services offerings have no modeled upper bound since the model focused on a select subset of each of these services. Generics sourcing programs have an upper bound which is equivalent to the full value of the generics price decrease, but no explicit modeled value since the highly complicated generic pharmaceutical industry, which is driven by multiple forces, makes it challenging to assign a specific value to each factor.

Scenarios methodology

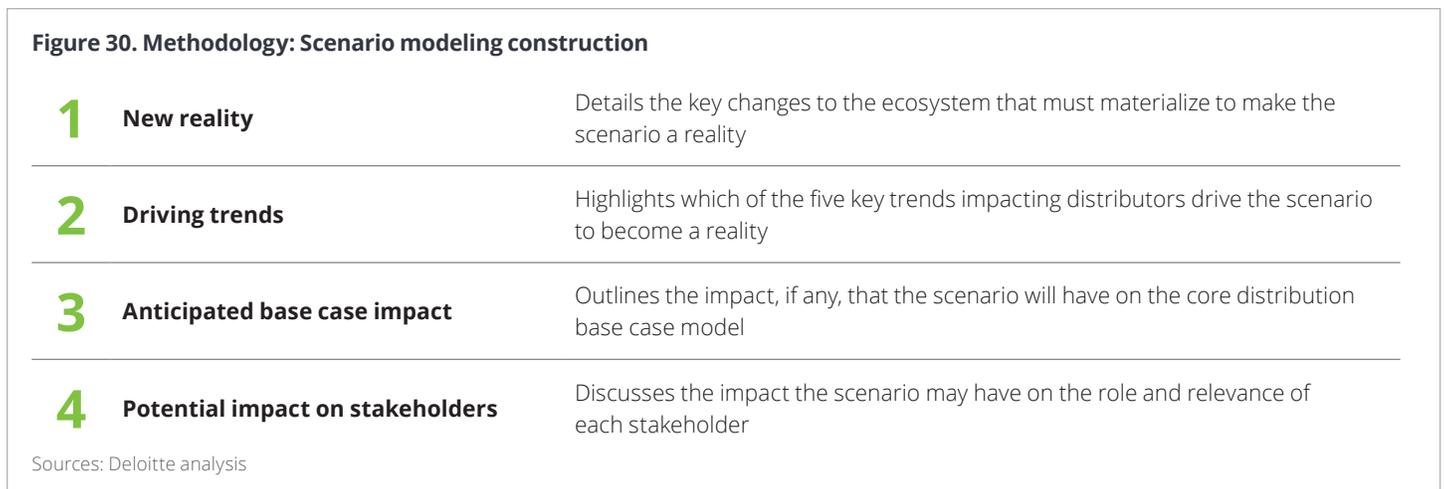
Modeling approach

Several future-state scenarios were developed that may materialize in the next five years, fueled by the key trends impacting both distributors and the pharmaceutical ecosystem.



Modeling construction

Each scenario has four considerations that describe the new reality of that scenario and the potential impact of that scenario on the base case model and ecosystem stakeholders, which is depicted in the figure below.



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Authors and acknowledgements

Terry Hisey
Principal

Deloitte Consulting LLP
rhisey@deloitte.com
+1 267 210 7781

Matt Heim
Senior Manager

Deloitte Consulting LLP
mheim@deloitte.com
+1 862 812 0559

Special thanks to:
Healthcare Distribution Alliance

and

Rob Jacoby
Principal

Deloitte Consulting LLP
rbjacoby@deloitte.com
+1 415 601 9305

Jeremy Mancke
Specialist Leader

Deloitte Consulting LLP
jemancke@deloitte.com
+1 571 480 2145

Chris Entrup
Deloitte Consulting LLP



About the Healthcare Distribution Alliance

The Healthcare Distribution Alliance (HDA) represents primary pharmaceutical distributors — the vital link between the nation's pharmaceutical manufacturers and pharmacies, hospitals, long-term care facilities, clinics and others nationwide. Since 1876, HDA has helped members navigate regulations and innovations to help get the right medicines to the right patients at the right time, safely and efficiently. The HDA Research Foundation, HDA's non-profit charitable foundation, serves the healthcare industry by providing research and education focused on priority healthcare supply chain issues.



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