

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

FORM 10-K

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2019

or

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____
Commission File Number: 001-35907

IQVIA HOLDINGS INC.



(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

27-1341991
(I.R.S. Employer
Identification Number)

4820 Emperor Blvd., Durham, North Carolina 27703

and

83 Wooster Heights Road, Danbury, Connecticut 06810

(Address of principal executive offices and Zip Code)

(919) 998-2000 and (203) 448-4600

(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value \$0.01 per share	IQV	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or section 15(d) of the Exchange Act. Yes No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding twelve months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Non-accelerated filer

Emerging growth company

Accelerated filer

Smaller reporting company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes No

The aggregate market value of the voting and non-voting common stock held by non-affiliates of the registrant, based upon the closing sale price as reported on the New York Stock Exchange on June 28, 2019, the last business day of the registrant's most recently completed second quarter, was approximately \$28.6 billion.

As of February 7, 2020, there were approximately 192,339,093 shares of the registrant's common stock outstanding.

Portions of the registrant's Proxy Statement for the 2020 Annual Meeting of Stockholders are incorporated herein by reference in Part III of this Annual Report on Form 10-K to the extent stated herein. Such proxy statement will be filed with the Securities and Exchange Commission within 120 days of the registrant's fiscal year ended December 31, 2019.

IQVIA HOLDINGS INC.

FORM 10-K

TABLE OF CONTENTS

Item		Page
PART I		
1.	Business	5
1A.	Risk Factors	13
1B.	Unresolved Staff Comments	34
2.	Properties	35
3.	Legal Proceedings	35
4.	Mine Safety Disclosures	35
PART II		
5.	Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities	36
6.	Selected Financial Data	39
7.	Management's Discussion and Analysis of Financial Condition and Results of Operations	41
7A.	Quantitative and Qualitative Disclosures About Market Risk	54
8.	Financial Statements and Supplementary Data	55
9.	Changes in and Disagreements with Accountants on Accounting and Financial Disclosure	104
9A.	Controls and Procedures	104
9B.	Other Information	104
PART III		
10.	Directors, Executive Officers and Corporate Governance	105
11.	Executive Compensation	106
12.	Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	107
13.	Certain Relationships and Related Transactions and Director Independence	107
14.	Principal Accountant Fees and Services	107
PART IV		
15.	Exhibits and Financial Statement Schedules	108
	Exhibit Index	109
16.	Form 10-K Summary	113
	Signatures	114

FORWARD-LOOKING STATEMENTS

Except for any historical information contained herein, the matters discussed or incorporated by reference in this Annual Report on Form 10-K contains forward-looking statements within the meaning of the federal securities laws, including Section 27A of the Securities Act of 1933, as amended (“Securities Act”), and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). Such forward-looking statements reflect, among other things, our current expectations, our forecasts and our anticipated results of operations, all of which are subject to known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements, market trends, or industry results to differ materially from those expressed or implied by such forward-looking statements. Therefore, any statements contained herein that are not statements of historical fact may be forward-looking statements and should be evaluated as such. Without limiting the foregoing, the words “anticipates,” “believes,” “estimates,” “expects,” “intends,” “may,” “plans,” “projects,” “should,” “targets,” “will” and the negative thereof and similar words and expressions are intended to identify forward-looking statements.

We caution you that any such forward-looking statements are further qualified by important factors that could cause our actual operating results to differ materially from those in the forward-looking statements, including without limitation, that most of our contracts may be terminated on short notice, and we may lose or experience delays with large client contracts or be unable to enter into new contracts; imposition of restrictions on our use of data by data suppliers or their refusal to license data to us; any failure by us to comply with contractual, regulatory or ethical requirements under our contracts, including current or changes to data protection and privacy laws; breaches or misuse of our or our outsourcing partners’ security or communications systems; hardware and software failures, delays in the operation of our computer and communications systems or the failure to implement system enhancements; failure to meet our productivity or business transformation objectives; failure to successfully invest in growth opportunities; our ability to protect our intellectual property rights and our susceptibility to claims by others that we are infringing on their intellectual property rights; the expiration or inability to acquire third party licenses for technology or intellectual property; any failure by us to accurately and timely price and formulate cost estimates for contracts, or to document change orders; the rate at which our backlog converts to revenue; our ability to acquire, develop and implement technology necessary for our business; consolidation in the industries in which our clients operate; risks related to client or therapeutic concentration; the risks associated with operating on a global basis, including currency or exchange rate fluctuations and legal compliance, including anti-corruption laws; risks related to changes in accounting standards; general economic conditions in the markets in which we operate, including financial market conditions and risks related to sales to government entities; the risks associated with business disruptions caused by natural disasters, pandemics such as the COVID-19 (coronavirus) or international conflict or other disruptions outside of our control; the impact of changes in tax laws and regulations; and our ability to successfully integrate, and achieve expected benefits from, our acquired businesses.

These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including those described in Part I, Item 1A, “Risk Factors.” If one or more of these risks or uncertainties materialize, or if underlying assumptions prove incorrect, our actual results may vary materially from those expected, estimated or projected or as otherwise suggested by the forward-looking statements that we make for a number of reasons. Given these uncertainties, users of the information included or incorporated by reference in this Form 10-K, including investors and prospective investors, are cautioned not to place undue reliance on such forward-looking statements. All forward-looking statements are made only as of the date hereof. We assume no obligation to update any such forward-looking information to reflect actual results or changes in the factors affecting such forward-looking information.

GENERAL

When we use the terms “IQVIA,” the “Company,” “we,” “us” or “our” in this Annual Report on Form 10-K, we mean IQVIA Holdings Inc. and its subsidiaries on a consolidated basis, unless we state or the context implies otherwise.

INDUSTRY AND MARKET DATA

This annual report on Form 10-K includes market data and forecasts with respect to the healthcare industry. In some cases, we rely on and refer to market data and certain industry forecasts that were obtained from third party surveys, market research, consultant surveys, publicly available information and industry publications and surveys that we believe to be reliable. However, we have not independently verified data from industry analyses and cannot guarantee their accuracy or completeness. We believe that data regarding the industry, market size and its market position and market share within such industry provide general guidance but are inherently imprecise. Other industry and market data included in this annual report are from IQVIA analyses and have been identified accordingly, including, for example, IQVIA Market Prognosis, which is a subscription-based service that provides five-year pharmaceutical market forecasts at the national, regional and global levels. We are a leading global information provider for the healthcare industry and we maintain databases, produce market analyses and deliver information to clients in the ordinary course of our business. Our information is widely referenced in the industry and used by governments, payers, academia, the life sciences industry, the financial community and others. Most of this information is available on a subscription basis. Other reports and information are available publicly through our IQVIA Institute for Human Data Science (the "IQVIA Institute"). All such information is based upon our own market research, internal databases and published reports and has not been verified by any independent sources. Our estimates and assumptions involve risks and uncertainties and are subject to change based on various factors, including those discussed in Part I, Item IA, "Risk Factors". These and other factors could cause results to differ materially from those expressed in the estimates and assumptions.

TRADEMARKS AND SERVICE MARKS

All trademarks, trade names, product names, graphics and logos of IQVIA contained herein are trademarks or registered trademarks of IQVIA Holdings Inc. or its subsidiaries, as applicable, in the United States and/or other countries. All other party trademarks, trade names, product names, graphics and logos contained herein are the property of their respective owners. The use or display of other parties' trademarks, trade names, product names, graphics or logos is not intended to imply, and should not be construed to imply, a relationship with, or endorsement or sponsorship of IQVIA Inc. or its subsidiaries by such other party.

Solely for convenience, the trademarks, service marks and trade names referred to in this annual report are listed without the ®, (sm) and (TM) symbols, but we will assert, to the fullest extent under applicable law, our rights or the rights of the applicable licensors to these trademarks, service marks and trade names.

PART I

Item 1. Business

Our Company

IQVIA is a leading global provider of advanced analytics, technology solutions and contract research services to the life sciences industry. Formed through the Merger of IMS Health and Quintiles, IQVIA applies human data science – leveraging the analytic rigor and clarity of data science to the ever-expanding scope of human science – to enable companies to reimagine and develop new approaches to clinical development and commercialization, speed innovation, and accelerate improvements in healthcare outcomes. Powered by the IQVIA CORE, we deliver unique and actionable insights at the intersection of large scale analytics, transformative technology and extensive domain expertise as well as execution capabilities. With approximately 67,000 employees, we conduct operations in more than 100 countries.

We have one of the largest and most comprehensive collections of healthcare information in the world, which includes more than 800 million comprehensive, longitudinal, non-identified patient records spanning sales, prescription and promotional data, medical claims, electronic medical records, genomics, and social media. Our scaled and growing information set contains over 35 petabytes of proprietary data sourced from more than 150,000 data suppliers and covering over one million data feeds globally. Based on this data, we deliver information and insights on over 85% of the world's pharmaceuticals, as measured by 2018 sales. We standardize, curate, structure and integrate this information by applying our sophisticated analytics and leveraging our global technology infrastructure. This helps our clients run their organizations more efficiently and make better decisions to improve their clinical, commercial and financial performance. The breadth of the intelligent, actionable information we provide is not comprehensively available from any other source and our scope of information would be difficult and costly for another party to replicate.

We combine our proprietary information assets with advanced analytics, transformative technology and domain expertise to develop clinical and commercial capabilities that enable us to grow our relationships with healthcare stakeholders throughout the life science's value chain. This set of capabilities includes:

- ***A leading healthcare-specific global IT infrastructure***, representing what we believe is one of the largest and most sophisticated information technology (“IT”) infrastructures in healthcare. We receive over 95 billion healthcare records annually, and our infrastructure then connects complex healthcare data while applying a wide range of privacy, security, operational, legal and contractual protections for data in response to local law, supplier requirements and industry leading practices;
- ***Analytics-driven clinical development***, which improves clinical trial design, site identification and patient recruitment by empowering therapeutic, scientific, and domain experts with expansive levels of information, including product level tracking in 90 markets, and information about treatments and outcomes on more than 800 million non-identified patients globally;
- ***Robust real world solutions ecosystem***, with sophisticated retrospective database analytics, prospective real world data collection technology platforms and scientific expertise, which enables us to address critical healthcare issues of cost, value and patient outcomes;
- ***A growing set of proprietary clinical and commercial applications***, which helps our clients increase their clinical operations performance, supports their regulatory and compliance needs and orchestrates their sales operations, sales management, multi-channel marketing and performance management; and
- ***A staff of approximately 67,000 employees*** across the globe, including over 23,000 Technology & Analytics Solutions employees, approximately 35,000 Research & Development Solutions employees and approximately 7,000 Contract Sales & Medical Solutions employees.
- ***Integration of information, analytics, technology, and domain expertise through the IQVIA CORE***, which enables us to provide our clients with more effective options to address their needs from Research and Development through commercialization as well as truly innovative breakthroughs such as virtual trials and global real-world evidence networks.

Our Market Opportunity

We compete in a market of greater than \$230 billion consisting of outsourced research and development, real-world evidence and connected health and technology enabled clinical and commercial operations markets for life sciences companies and the broader healthcare industry. The following sets forth our estimates for the size of our principal markets:

- ***Outsourced research and development:*** Biopharmaceutical spending on drug development totaled over \$100 billion in 2019. Of that amount, we estimate that our addressable opportunity (clinical development spending excluding preclinical spending) was approximately \$66 billion. The portion of this addressable opportunity that was outsourced in 2019, based on our estimates, was approximately \$35 billion;
- ***Real-World Evidence and connected health:*** Total addressable market of approximately \$80 billion based on 2019 sales that consists of two relatively equal parts. First, the market for Real-World Evidence of approximately \$40 billion includes traditionally defined analytic platforms and implementation, medical and scientific analytic services, observation studies and market access. Second, the market for connected healthcare of approximately \$40 billion includes areas such as revenue cycle management, payer analytics and clinical decision support services; and
- ***Technology enabled commercial operations:*** Total addressable market of approximately \$50 billion based on 2019 sales that includes information, data warehousing, IT outsourcing, software applications and other services in the broader market for IT services. This addressable market also includes commercial services such as recruiting, training, deploying and managing global sales forces, channel management, patient engagement services, market access consulting, brand communication, advisory services, and health information analytics and technology consulting.

In deriving estimates of the size of the various markets described above, we review third-party sources, which include estimates and forecasts of spending in various segments, in combination with internal IQVIA research and analysis informed by our experience serving these segments, as well as projected growth rates for each of these segments. See “Industry and Market Data” above.

We believe there are six key trends affecting our end markets that will create increasing demand for research and development services, technology & analytics solutions and contract and medical solutions:

Growth and innovation in the life sciences industry. The life sciences industry is a large and critical part of the global healthcare system, and, according to the latest information available from the IQVIA Market Prognosis service, is estimated to have generated approximately \$1.25 trillion in revenue in 2019. According to our research, revenue growth in the life sciences industry globally is expected to range from 3% to 6% between 2020 and 2024. According to the IQVIA Institute, it is estimated that spending on pharmaceuticals in emerging markets will expand at a 5% to 8% compound annual growth rate (“CAGR”) through 2024. The growth of emerging markets is making these geographies strategically important to life sciences organizations and, consistent with their approach in the developed markets, we expect these organizations to apply a high degree of sophistication to their commercial operations in these countries. For global companies, this requires highly localized knowledge and information assets, the development of market access strategies and performance benchmarking. In addition, local players are learning that they need to compete on the basis of improved information and analytics.

Growth in Research and Development. Spending trends in research and development are impacted as a result of several factors, including major biopharmaceutical companies’ efforts to replenish revenues lost from the so-called “patent cliff,” increased access to capital by the small and midcap biotechnology industry, and recent increases in pharmaceutical approvals by regulatory authorities. The IQVIA Institute also estimates that approximately 270 new molecular entities (“NMEs”) are expected to be approved between 2020 and 2024, compared to 236 between 2015 and 2019, and 200 between 2010 and 2014. We believe that further research and development spending, combined with the continued need for cost efficiency across the healthcare landscape, will continue to create opportunities for biopharmaceutical services companies, particularly those with a global reach and broad service offerings, to help biopharmaceutical companies with their pre- and post-launch solutions development and commercialization needs.

Increased Complexity in Research and Development. Biopharmaceutical companies face environments in which it has become increasingly difficult to operate. Improved standards of care in many therapeutic areas and the emergence of new types of therapies, such as biologics, genetically targeted therapies, gene and stem cell therapies, and other treatment modalities have led to more complex development and regulatory pathways. We believe that our global clinical development capabilities, including our expertise in biomarkers and genomics and our global laboratory network, position us well to help biopharmaceutical companies manage the complexities inherent in an environment where this type of expertise is important. For example, the IQVIA CORE helps us validate protocols to ensure studies in new disease areas have greater accuracy and also enables us, through innovations such as predictive analytics, to find patients who may not have been diagnosed.

Regulators require clinical trials involving local populations as part of the process for approving new pharmaceutical products, especially in certain Asian and emerging markets. Understanding the epidemiological and physiological differences in different ethnic populations and being able to conduct clinical trials locally in certain geographies will be important to pharmaceutical product growth strategies, both for multinational and local/regional biopharmaceutical companies. We believe that our global clinical development capabilities and unmatched presence in Asia and other emerging markets make us a strong partner for biopharmaceutical companies managing the complexities of international drug development.

Financial pressures driving the need for increased efficiency. Despite expected accelerating growth in the global life sciences market, we believe our clients will face increased operating margin pressure due to their changing product mix, pricing and reimbursement challenges, and rising costs of compliance. Product portfolios for life sciences companies have shifted toward specialty products with lower peak market sales potential than traditional primary care medicines. We believe that the need for biopharmaceutical companies to maximize productivity and lower costs across their processes from research and development through commercial operations will cause them to look to partners as they enter into outsourcing arrangements to improve efficiency. Further, our clients are looking for new ways to simplify processes and drive operational efficiencies by using automation, consolidating vendors and adopting new technology options such as hosted and cloud-based applications. This provides opportunities for technology services vendors to capture and consolidate internal spending by providing lower-cost and variable-cost options that lower clients' research and development, selling, marketing and administrative costs.

Evolving need to integrate and structure expanding sources of data. Over the past decade, many health systems around the world have focused on digitizing medical records. While such records theoretically enhance access to data, relevant information is often unintegrated, unstructured, siloed in disparate software systems, or entered inconsistently. In addition, new sources of data from the internet, such as social media and information on limited patient pools, and information resulting from enhanced diagnostic technologies are creating new sources of healthcare data.

In order to derive valuable insights from existing and expanding sources of information, clients need access to statistically significant data sets organized into databases that can be queried and analyzed. For example, real-world evidence studies demonstrate practical and clinical efficacies, which we believe require the aggregation and integration of large clinical data sets across all care settings, types of therapies and patient cohorts. Longitudinal studies require analysis of non-identified patient diagnoses, treatments, procedures and laboratory test results to identify types of patients that will likely best respond to particular therapies. Finally, manufacturers also require the ability to analyze social media activity to identify unmet patient needs and support for new orphan drugs. This information is highly relevant to all healthcare stakeholders and we believe the opportunity to more broadly apply healthcare data can only be realized through structuring, organizing and integrating new and existing forms of data in conjunction with sophisticated analytics.

Need for demonstrated value in healthcare. Participants in the healthcare industry are focused on improving quality and reducing costs, both of which require assessment of quality and value of therapies and providers. As a result, physicians no longer make prescribing decisions in isolation, but rather in the context of guidance and rules from payers, integrated delivery networks and governments. We believe life sciences companies are working to bring alignment across constituents on the value of their treatments in order to successfully develop and commercialize new therapies.

There is increasing pressure on life sciences companies to support and justify the value of their therapies. Many new drugs that are being approved are more expensive than existing therapies and will likely receive heightened scrutiny by regulators and payers to determine whether the existing treatment options would be sufficient. Additionally, many new specialty drugs are molecular-based therapies and require a more detailed understanding of clinical factors and influencers that demonstrate therapeutic value. As a result, leading life sciences companies are utilizing more sophisticated outcome research and data analytics services.

We believe we are well positioned to take advantage of these global trends in healthcare. Beyond our proprietary information assets, we have developed key capabilities to assess opportunities to develop and commercialize therapies, support and defend the value of medicines and help our clients operate more efficiently through the application of insight-driven decision-making and cost-efficient technology solutions.

Our Growth Strategy

We believe we are well positioned for continued growth across the markets we serve. Our strategy for achieving growth includes:

Continue to innovate by leveraging our information, advanced analytics, transformative technology and significant domain expertise. As a leader in the development and commercialization of new pharmaceutical therapies, we can empower our therapeutic, scientific and domain experts with expansive levels of information including product level tracking in 90 markets and information about treatments and outcomes on more than 800 million non-identified patients. By integrating these capabilities in the IQVIA CORE, we have the ability to optimize the clinical trial process and enable our clients to reduce costs and get their products to market more quickly through more informed site selection, faster patient recruitment practices and virtual trials. We transform Real World Evidence by linking prospective and retrospective approaches and introduce innovation such as secondary control arms, which eliminate the need for a placebo group. We bring best in class SaaS platforms, purpose built for life sciences, to our clients to help them run their clinical and commercial operations more efficiently.

Build upon our extensive client relationships. We have a diversified base of over 8,000 clients in over 100 countries and have expanded our client value proposition to address a broader market for research and development and commercial operations which we estimate to be more than \$230 billion in 2019. Through the combined offerings of research and development and commercial services we built a platform that allows us to be a more complete partner to our clients.

Expand portfolio through strategic acquisitions. We have and expect to continue to acquire assets and businesses that strengthen our value proposition to clients. We have developed an internal capability to source, evaluate and integrate acquisitions that have created value for stockholders. As the global healthcare landscape evolves, we expect that there will be a growing number of acquisition opportunities across the life sciences, payer and provider sectors. We expect to continue to invest in or explore opportunities for strategic acquisitions to grow our platform and enhance our ability to provide more services to our clients.

Expand the penetration of our offerings to the broader healthcare marketplace. We believe that substantial opportunities exist to use our existing technology and domain expertise to serve additional healthcare stakeholders (payers, providers, healthcare professionals) to quantify and optimize cost of care delivery; provide registry technology to professional association and patient communities and support healthcare providers with system implementation and platform migration.

Our Offerings

We offer hundreds of distinct services, applications, technology platforms and solutions to help our clients make critical decisions and perform better. We have three operating segments: Technology & Analytics Solutions, Research & Development Solutions and Contract Sales & Medical Solutions. Their offerings complement each other and can provide enhanced value to our clients when delivered together, with each driving demand for the other.

Our Technology & Analytics Solutions offerings include:

Technology platforms. We provide an extensive range of cloud-based applications and associated implementation services. Software as a Service (“SaaS”) solutions that support a wide range of clinical and commercial processes, including clinical trial design and planning, site start-up, patient consent, site payments, content management, multi-channel marketing, real-world evidence generation, customer relationship management (“CRM”), performance management, incentive compensation, territory alignment, roster management, call planning, compliance and safety reporting and master data management. These solutions are used by healthcare companies to manage, optimize and execute their clinical and commercial strategies in an orchestrated manner while addressing their regulatory obligations. Using proprietary algorithms, we combine our country-level data, healthcare expertise and therapeutic knowledge in over 100 countries to create our Global Market Insight family of offerings such as MIDAS, Analytics Link and Disease Insights, which provides a leading source of insight into international market dynamics and are used by most large pharmaceutical companies.

Real World Solutions. We enable life sciences and provider customers to generate and disseminate evidence in a cost-efficient manner which informs health care decision making and ultimately improves patients’ outcomes. Our use of a wide range of privacy and security safeguards protect non-identified patient-level medical claims, prescriptions, electronic medical records, genomics,

patient reported outcome and social media data. Our scaled information networks include more than 800 million non-identified patients globally. We technology-enable these data flows by harmonizing them to common data models and loading them onto our proprietary evidence platforms for secure access by our customers. We provide access to deep clinical data in Oncology, Rare Disease, and other specialty areas. Our Natural Language Processing capabilities help us create structured data from unstructured clinical notes. We help our global customers across payers, providers, governments, and biopharmaceutical companies to answer critical questions about healthcare interventions related to safety, effectiveness, and value. We also bring together stakeholders across healthcare to collaborate in efforts to develop new information sources, more effective reimbursement models, and better patient outcomes.

Analytics and consulting services. We provide a broad set of strategic and implementation consulting services, including advanced analytics and commercial processes outsourcing services to help the commercial operations of life sciences companies successfully transform their commercial models, engage more effectively with the healthcare stakeholders and reduce their operating costs. We also help our client's R&D function to address strategic challenges in the drug development process. Our global teams leverage local market knowledge, deep scientific and therapeutic area expertise and our global information resources to assist our clients with R&D strategy, portfolio, brand and commercial strategy, as well as pricing and market access and launch excellence.

Information offerings. Our national offerings comprise unique services in over 100 countries that provide consistent country level performance metrics related to sales of pharmaceutical products, prescribing trends, medical treatment and promotional activity across multiple channels including retail, hospital and mail order. Our sub-national offerings comprise unique services in over 70 countries that provide a consistent measurement of sales or prescribing activity at the regional, zip code and individual prescriber level (depending on regulation in the relevant country). Our widely used reference database that tracks approximately 20 million healthcare professionals in over 100 countries, providing a comprehensive view of health care practitioners that is critical for the commercial success of our clients' marketing and sales initiatives.

Our Research & Development Solutions offerings include:

Project Management and Clinical Monitoring. Drawing upon our years of experience, our site databases, our site relationships and our highly trained staff, our solutions and services enables the efficient conduct and coordination of multi-site clinical trials (generally Phase II-IV). Our service offerings include protocol design, feasibility and operational planning, site start up, patient recruitment and clinical site monitoring. By infusing technology into field-based monitoring, we are able to reduce data collection steps and time.

Clinical Trial Support Services. Each clinical trial requires a number of concurrent services and data streams. We offer a broad range of functional services and consultation to support clinical trials through specialized expertise that help clients efficiently collect, analyze and report the quality data and evidence they need to gain regulatory approval.

Q² Solutions. We provide our clients globally scaled end-to-end clinical trial laboratory and research services through our majority-owned joint venture with Quest Diagnostics Incorporated ("Quest"), which was formed on July 1, 2015. We offer the full range of central laboratory, genomic, bioanalytical, ADME, discovery, vaccine and biomarker laboratory services along with sample and consent tracking services supporting clinical trials offerings within the joint venture, which is referred to as Q² Solutions.

Strategic Planning and Design. By bringing our data science capabilities to our strategic planning and design services, we offer consultation services to improve decisions and performance including portfolio, program and protocol planning and design, biomarker consultation, benefit-risk management, regulatory affairs, biostatistics, modeling and simulation, and personalized medicine.

Virtual Trials. Utilizing our proprietary information assets and transformative technology, we bring trials directly to patients, with the objective of increasing participation and improving cycle times. Combining this with purpose-built processes and industry-leading clinical capabilities, we help clients reach diverse and difficult to recruit patient populations.

Our principal Contract Sales & Medical Solutions offerings include:

Health Care Provider Engagement Services. We partner with biopharmaceutical companies and other life sciences providers (e.g., medical device companies) to develop and deploy tailored stakeholder engagement solutions, including contract sales and market access professionals, which are focused on product sales and improving brand value at all stages of the product lifecycle from initial market entry to brands nearing patent expiry.

Patient Engagement Services. Our nurse-based programs directly engage with patients to help improve their disease and medication understanding through interventional and non-interventional support, while also providing assistance in navigating complex reimbursement coverage issues. Our patient engagement services combine insight from clinical trials and social listening,

behavioral design, personal and innovative eHealth multichannel interactions across multiple sites (e.g., the physician's office, hospital, pharmacy, home), that act as an extension of the Health Care Provider prescribed treatment course which can lead to improved adherence and better overall outcomes.

Medical Affairs Services. We provide a range of scientific strategy and medical affairs services to help biopharmaceutical companies plan and transition from the clinical trial setting to commercialization. Beginning in the clinical trial stage, our services can deploy educators to clinical trial sites to accelerate patient recruitment and improve retention, assist in translation of complex clinical trial data into a compelling scientific platform and publication strategy, and, provide field medical teams to facilitate scientific engagement with key opinion leaders and healthcare decision makers, before and after product approval.

Our Clients

Sales to companies in life sciences, including pharmaceutical companies, biotechnology companies, device and diagnostic companies, and consumer health companies, accounted for the majority of our revenues. Nearly all of the top 100 global pharmaceutical and biotechnology companies, measured by revenue, are clients, and many of these companies subscribe to reports and services in many countries. Other clients include payers, government and regulatory agencies, providers, pharmaceutical distributors, and pharmacies. Our client base is broad in scope and enables us to avoid dependence on any single client. No single client accounted for 10% or more of our total company revenues in 2019, 2018 or 2017. As of December 31, 2019 the largest client based on its percentage of total company revenue contributed approximately 5%.

Our Competition

Our Technology & Analytics Solutions business competes with a broad and diverse set of businesses. While we believe no competitor provides the combination of geographical reach and breadth of its services, we generally compete in the countries in which we operate with other information, analytics, technology, services and consulting companies, as well as with the in-house capabilities of our clients. Also, we compete with certain government agencies, private payers and other healthcare stakeholders that provide their data directly to others. In addition to country-by-country competition, we have a number of regional and global competitors in the marketplace as well. Our offerings compete with various firms, including Accenture, Aetion, Boston Health Economics, Cognizant Technology Solutions, Covance Inc., Deloitte, Evidera, (now part of PPD), GfK, LexisNexis Risk Solutions, IBM, Infosys, Kantar Health, McKinsey, Nielsen, OptumInsight, PAREXEL International Corporation, Press Ganey, RTI Health Solutions, PRA Health Sciences, Tempus, Veeva, and ZS Associates. We also compete with a broad range of new entrants and start-ups that are looking to bring new technologies and business models to healthcare information services and technology services.

The markets for Research & Development Solutions offerings are highly competitive, and we compete against traditional contract research organizations ("CROs"), the in-house research and development departments of biopharmaceutical companies, universities, and teaching hospitals. Among the traditional CROs, there are several-hundred small, limited-service providers, several medium-sized firms and only a few full-service companies with global capabilities. Our primary competitors include Covance Inc., ICON plc, PAREXEL International Corporation, Pharmaceutical Product Development, Inc., PRA Health Sciences, and Syneos Health, among others.

Our Contract Sales & Medical Solutions business competes against the in-house sales and marketing departments of biopharmaceutical companies, other contract pharmaceutical sales and service organizations and consulting firms. Contract Sales & Medical Solutions' primary competitor in the United States is Syneos Health, Publicis and United Drug plc. Outside of the United States, Contract Sales & Medical Solutions typically competes against single country or more regionally focused service providers, such as United Drug plc, Syneos Health, EPS Corporation and CMIC HOLDINGS Co., Ltd.

Government Regulation

Many aspects of our businesses are regulated by federal and state laws, rules and regulations. Accordingly, we maintain a robust compliance program aimed at ensuring we operate our business in compliance with all existing legal requirements material to the operation of our businesses. There are, however, occasionally uncertainties involving the application of various legal requirements, the violation of which could result in, among other things, fines or other sanctions. See Part I, Item 1A, "Risk Factors" for additional detail.

Good Clinical Practice

Good Clinical Practice ("GCP") regulations and guidelines are the industry standard for the conduct of clinical trials with respect to maintaining the integrity of the data and safety of the research subjects. The United States Food and Drug Administration ("FDA"), the European Medicines Agency ("EMA"), Japan's Ministry of Health, Labour and Welfare and most other global

regulatory authorities expect that study results and data submitted to such authorities be based on clinical trials conducted in accordance with GCP provisions. Records for clinical trials must be maintained for specified periods for inspection by the FDA and other regulators.

Regulation of Drugs, Biologics and Medical Devices

In the United States, pharmaceutical, biological and medical device products are subject to extensive regulation by the FDA. The Federal Food, Drug, and Cosmetic Act (“FDC Act”), the Public Health Service Act (“PHS Act”), and other federal and state statutes and regulations, govern, among other things, the research, development, testing, manufacture, storage, recordkeeping, approval, labeling, promotion and marketing, distribution, post-approval monitoring and reporting, sampling, and import and export of pharmaceutical, biological and medical device products. Failure to comply with applicable United States requirements may subject a company to a variety of administrative or judicial sanctions, such as FDA refusal to approve a pending new drug application (“NDA”) for a new drug, a biologics license application (“BLA”) for a new biological product pre-market approval (“PMA”) or clearance for a new medical device, warning or untitled letters, clinical holds, product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, civil penalties, and criminal prosecution.

Regulation of Patient Information

Our information management services relate to the processing of information regarding patient diagnosis and treatment of disease and are, therefore, subject to substantial governmental regulation. In addition, the confidentiality of patient-specific information and the circumstances under which such patient-specific records may be released for inclusion in our databases or used in other aspects of our business is heavily regulated. Federal, state and foreign governments are contemplating or have proposed or adopted additional legislation governing the possession, use and dissemination of personal data, such as personal health information and personal financial data, as well as security breach notification rules for loss or theft of such data. Additional legislation or regulation of this type might, among other things, require us to implement additional security measures and processes or bring within the legislation or regulation de-identified health or other data, each of which may require substantial expenditures or limit our ability to offer some of our services.

In particular, personal health information is recognized in many countries such as the United States, the European Union, or EU, and several countries in Asia, as a special, sensitive category of personal information, subject to additional mandatory protections. Violations of data protection regulations are subject to administrative penalties, civil money penalties and criminal prosecution, including corporate fines and personal liability.

Regulation of Promotion, Marketing and Distribution of Pharmaceutical Products and Medical Devices

Certain of our services are subject to detailed and comprehensive regulation in each geographic market in which we operate. Such regulation relates, among other things, to the distribution of drug samples, the marketing and promotion of approved products, the qualifications of sales representatives and the use of healthcare professionals in sales functions.

In the United States, certain of our services are subject to numerous federal and state laws pertaining to promotional activities involving pharmaceutical products and medical devices. Certain of our services are subject to the FDA’s regulations against “off-label promotion,” which require sales representatives to restrict promotion of the approved product they are detailing to the approved labeling for the product. The Prescription Drug Marketing Act imposes licensing, personnel record keeping, packaging, labeling, product handling and facility storage and security requirements. Other federal and state laws prohibit manufacturers, suppliers and providers from offering, giving or receiving kickbacks or other remuneration in connection with ordering or recommending the purchase or rental of healthcare items and services. The sale or distribution of pharmaceutical products and devices is also governed by the United States Federal Trade Commission Act and state consumer protection laws. We are subject to similar regulations currently in effect in the other countries where we offer Contract Sales & Medical Solutions.

We are also subject to various laws and regulations that may apply to certain drug and device promotional practices, including, among others, various aspects of Medicare and federal healthcare programs. Violations of these laws and regulations may result in criminal and/or civil penalties, including possibly as an “aider and abettor.”

Regulation of Laboratories

Our United States laboratories are subject to licensing and regulation under federal, state and local laws relating to hazard communication and employee right-to-know regulations, and the safety and health of laboratory employees. Additionally, our United States laboratories are subject to applicable federal and state laws and regulations and licensing requirements relating to the handling, storage and disposal of hazardous waste, radioactive materials and laboratory specimens, including the regulations of the

Environmental Protection Agency, the Nuclear Regulatory Commission, the Department of Transportation, the National Fire Protection Agency and the United States Drug Enforcement Administration (“DEA”). The use of controlled substances in testing for drugs with a potential for abuse is regulated in the United States by the DEA and by similar regulatory bodies in other parts of the world. Our United States laboratories using controlled substances for testing purposes are licensed by the DEA. The regulations of the United States Department of Transportation, Public Health Service and Postal Service apply to the surface and air transportation of laboratory specimens. Our laboratories also are subject to International Air Transport Association regulations, which govern international shipments of laboratory specimens. Furthermore, when the materials are sent to a foreign country, the transportation of such materials becomes subject to the laws, rules and regulations of such foreign country. Our laboratories outside the United States are subject to applicable national laws governing matters such as licensing, the handling and disposal of medical specimens, genetic material, hazardous waste and radioactive materials, as well as the health and safety of laboratory employees.

In addition to its comprehensive regulation of safety in the workplace, the United States Occupational Safety and Health Administration has established extensive requirements relating to workplace safety for healthcare employers whose workers may be exposed to blood-borne pathogens such as HIV and the hepatitis B virus. Although we believe that we are currently in compliance in all material respects with such federal, state and local laws, failure to comply with such laws could subject us to denial of the right to conduct business, fines, criminal penalties and other enforcement actions.

Further, laboratories that analyze human blood or other biological samples for the diagnosis and treatment of clinical trial subjects must comply with Clinical Laboratory Improvement Amendments (“CLIA”), as well as requirements established by various states. The failure to meet these requirements may result in civil penalties and suspension or revocation of the CLIA certification.

Our Intellectual Property

In addition to our proprietary data sets described above, we develop and use a number of proprietary methodologies, analytics, systems, technologies and other intellectual property in the conduct of our business. We rely upon a combination of legal, technical, and administrative safeguards to protect our proprietary and confidential information and trade secrets, and patent, copyright and trademark laws to protect other intellectual property rights. We consider our trademark and related names, marks and logos to be of material importance to our business, and we have registered or applied for registration for certain of these trademarks including IQVIA, in the United States and other jurisdictions and aggressively seek to protect them. Trademarks and service marks generally may be renewed indefinitely so long as they are in use and/or their registrations are properly maintained, and so long as they have not been found to have become generic. The technology and other intellectual property rights owned and licensed by us are of importance to our business, although our management believes that our business, as a whole, is not dependent upon any one intellectual property or group of such properties.

Our Employees

As of December 31, 2019, we have approximately 67,000 employees worldwide. Almost all of these employees are full-time. None of our employees are covered by a collective bargaining agreement or are represented by a labor union. Employees in certain locations outside of the United States are represented by works councils as required by local laws.

Available Information

Our website address is www.iqvia.com, and our investor relations website is located at <http://ir.iqvia.com>. Information on our website is not incorporated by reference herein. Copies of our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and our Proxy Statements for our annual meetings of stockholders, and any amendments to those reports, as well as Section 16 reports filed by our insiders, are available free of charge on our website as soon as reasonably practicable after we file the reports with, or furnish the reports to, the Securities and Exchange Commission (“SEC”). In addition, the SEC maintains an Internet site (<http://www.sec.gov>) containing reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. Information on the SEC’s website does not constitute part of this report. Also posted on our website are our certificate of incorporation and by-laws, the charters for our Audit Committee, Leadership Development and Compensation Committee and Nominating and Governance Committee, our Corporate Governance Guidelines, and our Code of Conduct governing our directors, officers and employees. Copies of our SEC reports and corporate governance information are available in print upon the request of any stockholder to our Investor Relations Department. Within the time period required by the SEC and the New York Stock Exchange (“NYSE”), we will post on our website any amendment to the Code of Conduct or any waiver of such policy applicable to any of our senior financial officers, executive officers or directors.

Item 1A. Risk Factors

RISK FACTORS

We operate in a rapidly changing environment that involves a number of risks, some of which are beyond our control. You should consider carefully the risks and uncertainties described below together with the other information included in this Annual Report on Form 10-K, including our consolidated financial statements and related notes included elsewhere in this Annual Report on Form 10-K, in evaluating our Company. The occurrence of any of the following risks may materially and adversely affect our business, financial condition, results of operations and future prospects.

Risks Relating to Our Business

The potential loss or delay of our large contracts or of multiple contracts could adversely affect our results.

Most of our Research & Development Solutions clients can terminate our contracts upon 30 to 90 days notice. Our clients may delay, terminate or reduce the scope of our contracts for a variety of reasons beyond our control, including but not limited to:

- decisions to forego or terminate a particular clinical trial;
- lack of available financing, budgetary limits or changing priorities;
- actions by regulatory authorities;
- production problems resulting in shortages of the drug being tested;
- failure of products being tested to satisfy safety requirements or efficacy criteria;
- unexpected or undesired clinical results for products;
- insufficient patient enrollment in a clinical trial;
- insufficient investigator recruitment;
- shift of business to a competitor or internal resources;
- product withdrawal following market launch; or
- shut down of manufacturing facilities.

As a result, contract terminations, delays and alterations are a regular part of our Research & Development Solutions business. In the event of termination, our contracts often provide for fees for winding down the project, but these fees may not be sufficient for us to realize the full amount of revenues or profits anticipated under the related services contracts, and termination may result in lower resource utilization rates. In addition, we will not realize the full benefits of our backlog of contractually committed services if our clients cancel, delay or reduce their commitments under our contracts with them, which may occur if, among other things, a client decides to shift its business to a competitor or revoke our status as a preferred provider. Thus, the loss or delay of a large contract or the loss or delay of multiple contracts could adversely affect our revenues and profitability. We believe the risk of loss or delay of multiple contracts potentially has greater effect where we are party to broader partnering arrangements with global biopharmaceutical companies.

We depend on third parties for data and support services. Our suppliers or providers might restrict our use of or refuse to license data or provide services, which could lead to our inability to access certain data or provide certain services and, as a result, materially and adversely affect our operating results and financial condition.

Each of our Technology & Analytics Solutions information services is derived from data we collect from third parties. These data suppliers are numerous and diverse, reflecting the broad scope of information that we collect and use in our business.

Although we typically enter into long-term contractual arrangements with many of these suppliers of data, at the time of entry into a new contract or renewal of an existing contract, suppliers may increase restrictions on our use of such data, increase the price they charge us for data or refuse altogether to license the data to us. In addition, during the term of any data supply contract, suppliers may fail to adhere to our data quality control standards or fail to deliver data. Further, although no single individual data supplier is material to our business, if a number of suppliers collectively representing a significant amount of data that we use for one or more of our services were to impose additional contractual restrictions on our use of or access to data, fail to adhere to our quality-control standards, repeatedly fail to deliver data or refuse to provide data, now or in the future, our ability to provide those services to our clients could be materially adversely impacted, which may harm our operating results and financial condition.

Additionally, we depend on third parties for support services to our business. Such support services include, but are not limited to, third-party transportation providers, suppliers of drugs for patients participating in clinical trials, suppliers of kits for use in our clinical trial laboratories business, suppliers of reagents for use in our testing equipment and providers of maintenance contracts for our equipment. The failure of any of these third parties to adequately provide the critical support services could have a material adverse effect on our business.

If we fail to perform our services in accordance with contractual requirements, regulatory standards and ethical considerations, we could be subject to significant costs or liability and our reputation could be harmed.

We contract with biopharmaceutical companies to perform a wide range of services to assist them in bringing new drugs to market. Our services include monitoring clinical trials, data and laboratory analysis, electronic data capture, patient recruitment and other related services, and we perform these services in a number of ways, including through physical and technology-enabled efforts. Such services are complex and subject to contractual requirements, regulatory standards and ethical considerations. For example, we must adhere to regulatory requirements such as the FDA and current GCP and Good Laboratory Practice requirements. If we fail to perform our services in accordance with these requirements, regulatory agencies may take action against us for failure to comply with applicable regulations governing clinical trials or sales and marketing practices. Such actions may include sanctions, such as injunctions or failure of such regulatory authorities to grant marketing approval of products, delay, suspension or withdrawal of approvals, license revocation, product seizures or recalls, operational restrictions, civil or criminal penalties or prosecutions, damages or fines. Clients may also bring claims against us for breach of our contractual obligations and patients in the clinical trials and patients taking drugs approved on the basis of those clinical trials may bring personal injury claims against us for negligence. Any such action could have a material adverse effect on our results of operations, financial condition and reputation.

Such consequences could arise if, among other things, the following occur:

Improper performance of our services. The performance of clinical development services is complex and time-consuming. For example, we may make mistakes in conducting a clinical trial that could negatively impact or obviate the usefulness of the clinical trial or cause the results of the clinical trial to be reported improperly. If the clinical trial results are compromised, we could be subject to significant costs or liability, which could have an adverse impact on our ability to perform our services. As examples:

- non-compliance generally could result in the termination of ongoing clinical trials or sales and marketing projects or the disqualification of data for submission to regulatory authorities;
- compromise of data from a particular clinical trial, such as failure to verify that informed consent was obtained from patients, could require us to repeat the clinical trial under the terms of our contract at no further cost to our client, but at a substantial cost to us; and
- breach of a contractual term could result in liability for damages or termination of the contract.

Large clinical trials can cost up to hundreds of millions of dollars, and while we endeavor to contractually limit our exposure to such risks, improper performance of our services could have an adverse effect on our financial condition, damage our reputation and result in the cancellation of current contracts by or failure to obtain future contracts from the affected client or other clients.

Investigation of clients. From time to time, one or more of our clients are audited or investigated by regulatory authorities or enforcement agencies with respect to regulatory compliance of their clinical trials, programs or the marketing and sale of their drugs. In these situations, we have often provided services to our clients with respect to the clinical trials, programs or activities being audited or investigated, and we are called upon to respond to requests for information by the authorities and agencies. There is a risk that either our clients or regulatory authorities could claim that we performed our services improperly or that we are responsible for clinical trial or program compliance. If our clients or regulatory authorities make such claims against us and prove them, we could be subject to damages, fines or penalties. In addition, negative publicity regarding regulatory compliance of our clients' clinical trials, programs or drugs could have an adverse effect on our business and reputation.

Insufficient client funding to complete a clinical trial. As noted above, clinical trials can cost hundreds of millions of dollars. There is a risk that we may initiate a clinical trial for a client, and then the client becomes unwilling or unable to fund the completion of the clinical trial. In such a situation, notwithstanding the client's ability or willingness to pay for or otherwise facilitate the completion of the clinical trial, we may be ethically bound to complete or wind down the clinical trial at our own expense.

Security breaches and unauthorized use of our IT systems and information, or the IT systems or information in the possession of our vendors, could expose us, our clients, our data suppliers or others to risk of loss.

We rely upon the security of our computer and communications systems infrastructure to protect us from cyberattacks and unauthorized access. Cyberattacks can include malware, computer viruses, hacking or other significant disruption of our computer, communications and related systems. Cyber threats are rapidly evolving and are becoming increasingly sophisticated. Despite our efforts to ensure the integrity of our systems, as cyber threats evolve and become more difficult to detect and successfully defend against, one or more cyber threats might defeat the measures that we or our vendors take to anticipate, detect, avoid or mitigate such threats. Certain techniques used to obtain unauthorized access, introduce malicious software, disable or degrade service, or sabotage systems may be designed to remain dormant until a triggering event and we may be unable to anticipate these techniques or implement adequate preventative measures since techniques change frequently or are not recognized until launched, and because cyberattacks can originate from a wide variety of sources. Although we take steps to manage and avoid these risks and to prevent their recurrence, our preventive and remedial actions may not be successful. Such attacks, whether successful or unsuccessful, could result in our incurring costs related to, for example, rebuilding internal systems, defending against litigation, responding to regulatory inquiries or actions, paying damages or fines, or taking other remedial steps with respect to third parties. Publicity about vulnerabilities and attempted or successful incursions could damage our reputation with clients and data suppliers and reduce demand for our services.

We also store proprietary and sensitive information in connection with our business, which could be compromised by a cyberattack. To the extent that any disruption or security breach results in a loss or damage to our data, an inappropriate disclosure of proprietary or sensitive information, an inability to access data sources, or an inability to process data or provide our offerings to our clients, it could cause significant damage to our reputation, affect our relationships with our data suppliers and clients (including loss of suppliers and clients), lead to claims against us and ultimately harm our business. We may be required to incur significant costs to alleviate, remedy or protect against damage caused by these disruptions or security breaches in the future. We may also face inquiry or increased scrutiny from government agencies as a result of any such disruption or breach. While we have insurance coverage for certain instances of a cyber security breach, our coverage may not be sufficient if we suffer a significant attack or multiple attacks. Any such breach or disruption could have a material adverse effect on our operating results and our reputation as a provider of mission-critical services.

Some of our vendors have significant responsibility for the security of certain of our data centers and computer-based platforms. Also, our data suppliers have responsibility for security of their own computer and communications environments. These third parties face risks relating to cyber security similar to ours, which could disrupt their businesses and therefore materially impact ours. Accordingly, we are subject to any flaw in or breaches to their computer and communications systems or those that they operate for us, which could result in a material adverse effect on our business, operations and financial results.

Failure to meet productivity objectives under our internal business transformation initiatives could adversely impact our competitiveness and harm our operating results.

We are pursuing business transformation initiatives to update technology, increase innovation and obtain operating efficiencies. As part of these initiatives, we seek to improve our productivity, flexibility, quality, functionality and cost savings by investing in the development and implementation of global platforms and integration of our business processes and functions to achieve economies of scale. For example, we have assessed our site activation processes and are moving forward with implementing organizational and process changes and technology transformations to accelerate site start-up timelines. We are also evaluating the customer buying experience, implementing technology platforms to streamline the proposal and contracting process and provide greater transparency to clients. These various initiatives may not yield their intended gains, or be completed in timely manner, which

may impact our competitiveness and our ability to meet our growth objectives and, as a result, materially and adversely affect our business, operating results and financial condition.

If we are unsuccessful at investing in growth opportunities, our business could be materially and adversely affected.

We continue to invest significantly in growth opportunities, including the development and acquisition of new data, technologies and services to meet our clients' needs. For example, we are expanding our services and technology offerings, such as the development of a cloud-based platform with a growing number of applications to support commercial operations for life sciences companies (e.g., multi-channel marketing, marketing campaign management, customer relationship management, incentive compensation management, targeting and segmentation, performance management and other applications). We also continue to invest significantly in growth opportunities in emerging markets, such as the development, launch and enhancement of services in China, India, Russia, Turkey, and other countries. We consider our presence in these markets to be an important component of our growth strategy.

There is no assurance that our investment plans or growth strategy will be successful or will produce a sufficient or any return on our investments. Further, if we are unable to develop new technologies and services, clients do not purchase our new technologies and services, our new technologies and services do not work as intended or there are delays in the availability or adoption of our new technologies and services, then we may not be able to grow our business or growth may occur slower than anticipated. Additionally, although we expect continued growth in healthcare spending in emerging markets, such spending may occur more slowly or not at all, and we may not benefit from our investments in these markets.

We plan to fund growth opportunities with cash from operations or from future financings. There can be no assurance that those sources will be available in sufficient amounts to fund future growth opportunities when needed.

Any of the foregoing could have a material and adverse effect on our operating results and financial condition.

Data protection, privacy and similar laws in the United States and around the world restrict access, use and disclosure of personal information, and failure to comply with or adapt to changes in these laws could materially and adversely harm our business.

The confidentiality, collection, use and disclosure of personal data, including individually identifiable health information and clinical trial patient-specific information, are subject to governmental regulation generally in the country that the personal data were collected or used. For example, United States federal regulations under the Health Insurance Portability and Accountability Act of 1996 ("HIPAA") create specific requirements for the protection of the privacy and security of individual health information. These provisions apply to both "covered entities" (primarily health care providers and health insurers) and their "business associates" or service providers. As there are some instances where we are a HIPAA "business associate" of a "covered entity," we can be directly liable for mishandling protected health information. Under HIPAA's enforcement scheme, we can be subject to significant penalties in connection with HIPAA violations, along with the potential for significant other expenditures related to these activities. These rules require individuals' written authorization in many situations, in addition to any required informed consent, before protected health information may be used for research. We are both directly and indirectly affected by the privacy provisions surrounding individual authorizations because many investigators with whom we are involved in clinical trials are directly subject to them as a HIPAA "covered entity" and because we obtain identifiable health information from third parties that are subject to such regulations. In general, patient health information is among the most sensitive (and highly regulated) of personal information and laws and regulations around the United States and the world are designed to ensure that information about an individual's healthcare is properly protected from inappropriate access, use and disclosure. Laws restricting access, use and disclosure of patient health information also include the European Union's ("EU") General Data Protection Regulation, Canada's Personal Information Protection and Electronic Documents Act and other data protection, privacy, data security and similar national, state/provincial and local laws. In the EU personal data includes any information that relates to an identified or identifiable natural person with health information carrying additional obligations, including obtaining the explicit consent from the individual for collection, use or disclosure of the information. In addition, we are subject to EU rules with respect to cross-border transfers of such data out of the EU (along with similar data transfer requirements or data localization requirements in other countries). The United States, the EU and its member states, and other countries where we have operations, such as Argentina, Brazil, Canada, Chile, China, Japan, Malaysia, Mexico, Philippines, Russia, Singapore, South Korea and Switzerland, continue to consider or have issued new privacy and data protection rules and regulations that relate to personal data and health information.

We have established frameworks, models, processes and technologies to manage privacy and security for many data types, from a variety of sources, and under myriad privacy and data protection laws worldwide. In addition, we rely on our data suppliers to deliver information to us in a form and in a manner that complies with applicable privacy and data protection laws. These laws are complex and there is no assurance that the safeguards and controls employed by us or our data suppliers will be sufficient to prevent a breach of these laws, or that claims will not be filed against us or our data suppliers despite such safeguards and controls. Failure to comply with such laws, certain certification/registration and annual re-certification/registration provisions associated with these data protection and privacy regulations, and similar rules in various jurisdictions, or to resolve any serious privacy complaints, may result in, among other things, regulatory sanctions, criminal prosecution, civil liability, negative publicity, damage to our reputation, or data being blocked from use or liability under contractual provisions. For example, in July 2015, indictments were issued by the Seoul Central District Prosecutors' Office in South Korea against IMS Korea and two of its employees, among others, alleging improper handling of sensitive health information in violation of applicable privacy laws. See Item 3 "Legal Proceedings" for additional information.

Laws and expectations relating to privacy continue to evolve, and we continue to adapt to changing needs. For example, the definition of "personally identifiable information" and "personal data" continues to evolve and broaden and many new laws and regulations are being enacted. In addition, certain long-established programs have been (or are at risk of being) declared invalid (such as the EU-U.S. Safe Harbor framework that operated for many years but was struck down by European courts in 2015), so that this area remains in a state of flux. Changes to these programs may adversely impact our ability to provide services to our clients or develop new products or services. Federal, state and foreign governments are contemplating or have proposed or adopted additional legislation governing the collection, possession, use or dissemination of personal data, such as personal health information, and personal financial data as well as security breach notification rules for loss or theft of such data. Additional legislation or regulation of this type might, among other things, require us to implement new security measures and processes or bring within the legislation other personal data not currently regulated, each of which may require substantial expenditures or limit our ability to offer some of our services. Additionally, changes in these laws (including newly released interpretations of these laws by courts and regulatory bodies) may limit our data access, use and disclosure, and may require increased expenditures by us or may dictate that we not offer certain types of services. Any of the foregoing may have a material adverse impact on our ability to provide services to our clients or maintain our profitability.

There is ongoing concern from privacy advocates, regulators and others regarding data protection and privacy issues, and the number of jurisdictions with data protection and privacy laws has been increasing. Also, there are ongoing public policy discussions regarding whether the standards for de-identified, anonymous or pseudonymized health information are sufficient, and the risk of re-identification sufficiently small, to adequately protect patient privacy. These discussions may lead to further restrictions on the use of such information. There can be no assurance that these initiatives or future initiatives will not adversely affect our ability to access and use data or to develop or market current or future services.

Data protection, privacy and similar laws protect more than patient information, and although they vary by jurisdiction, these laws can extend to employee information, business contact information, provider information and other information relating to identifiable individuals. Failure to comply with these laws may result in, among other things, civil and criminal liability, negative publicity, damage to our reputation and liability under contractual provisions. In addition, compliance with such laws may require increased costs to us or may dictate that we not offer certain types of services.

The occurrence of any of the foregoing could impact our ability to provide the same level of service to our clients, require us to modify our offerings or increase our costs, which could materially and adversely affect our operating results and financial condition.

Our success depends on our ability to protect our intellectual property rights.

Our success depends, in part, upon our ability to develop, use and protect our proprietary methodologies, analytics, systems, technologies and other intellectual property. We rely upon a combination of trade secrets, confidentiality policies, nondisclosure, invention assignment and other contractual arrangements, and patent, copyright and trademark laws, to protect our intellectual property rights. These laws are subject to change at any time and certain agreements may not be fully enforceable, which could further restrict our ability to protect our innovations. Further, these laws may not provide adequate protection for our intellectual property, particularly in countries in which the legal system provides less protection for intellectual property rights. Our intellectual property rights may not prevent competitors from independently developing services similar to or duplicative of ours. Further, the steps we take in this regard might not be adequate to prevent or deter infringement or other misappropriation of our intellectual property by competitors, former employees or other third parties, and we might not be able to detect unauthorized use of, or take appropriate and timely steps to enforce, our intellectual property rights.

Our ability to obtain, protect and enforce our intellectual property rights is subject to general litigation or third-party opposition risks, as well as the uncertainty as to the scope of protection, registrability, patentability, validity and enforceability of our intellectual property rights in each applicable country. Governments may adopt regulations, and government agencies or courts may render decisions, requiring compulsory licensing of intellectual property rights. When we seek to enforce our intellectual property rights, we may be subject to claims that the intellectual property rights are invalid or unenforceable. Litigation may be necessary in the future to enforce our intellectual property rights and to protect our confidential and proprietary information. Litigation brought to protect and enforce our intellectual property rights could be costly, time consuming and distracting to management and could result in the impairment or loss of portions of our intellectual property rights. Furthermore, our efforts to enforce our intellectual property rights may be met with defenses, counterclaims and countersuits attacking the validity and enforceability of our intellectual property rights. Our inability to protect our proprietary technology against unauthorized copying or use, as well as any costly litigation or diversion of our management's attention and resources, could delay further sales or the implementation of our solutions, impair the functionality of our solutions, delay introductions of new solutions, result in our substituting inferior or more costly technologies into our solutions, or injure our reputation and harm our operating results and financial condition.

The theft or unauthorized use or publication of our trade secrets and other confidential business information could reduce the differentiation of our services and harm our business; the value of our investment in development or business acquisitions could be reduced; and third parties might make claims against us related to losses of their confidential or proprietary information. In addition, we may not be able to discover or determine the extent of any unauthorized use of our proprietary rights. Third parties that license our proprietary rights also may take actions that diminish the value of our proprietary rights or reputation. The protection of our intellectual property may require the expenditure of significant financial and managerial resources. Moreover, the steps we take to protect our intellectual property may not adequately protect our rights or prevent third parties from infringing or misappropriating our proprietary rights. These incidents and claims could harm our business, reduce revenue, increase expenses and harm our reputation.

We may be subject to claims by others that we are infringing on their intellectual property rights.

Third parties may assert claims that we or our clients infringe their intellectual property rights and these claims, with or without merit, could be expensive to litigate, cause us to incur substantial costs and divert management resources and attention in defending the claim. In some jurisdictions, plaintiffs can also seek injunctive relief that may limit the operation of our business or prevent the marketing and selling of our services that infringe on the plaintiff's intellectual property rights. To resolve these claims, we may enter into licensing agreements with restrictive terms or significant fees, stop selling, be required to implement costly redesigns to the affected services, or pay damages to satisfy contractual obligations to others. If we do not resolve these claims in advance of a trial, there is no guarantee that we will be successful in court. These outcomes may have a material adverse impact on our business, operating results and financial condition.

In addition, certain contracts with our suppliers or clients contain provisions whereby we indemnify, subject to certain limitations, the counterparty for damages suffered as a result of claims related to intellectual property infringement and the use of data. Claims made under these provisions could be expensive to litigate and could result in significant payments.

We rely on licenses from third parties to certain technology and intellectual property rights for some of our services and the licenses we currently have could terminate or expire.

Some of our business services rely on technology or intellectual property rights owned and controlled by others. Our licenses to this technology or these intellectual property rights could be terminated or could expire. We may be unable to replace these licenses in a timely manner. Failure to renew these licenses, or renewals of these licenses on less advantageous terms, could harm our operating results and financial condition.

Our financial results may be adversely affected if we underprice our contracts, overrun our cost estimates or fail to receive approval for or experience delays in documenting change orders.

Most of our Research & Development Solutions contracts are either fee for service contracts or fixed-fee contracts. Our past financial results have been, and our future financial results may be, adversely impacted if we initially underprice our contracts or otherwise overrun our cost estimates and are unable to successfully negotiate a change order. Change orders typically occur when the scope of work we perform needs to be modified from that originally contemplated by our contract with the client. Modifications can occur, for example, when there is a change in a key clinical trial assumption or parameter or a significant change in timing. Where we are not successful in converting out-of-scope work into change orders under our current contracts, we bear the cost of the additional work. Such underpricing, significant cost overruns or delay in documentation of change orders could have a material adverse effect on our business, results of operations, financial condition or cash flows.

The relationship of backlog to revenues varies over time.

Backlog represents future revenues for our Research & Development Solutions business from work not yet completed or performed under signed binding commitments and signed contracts. Once work begins on a project, revenue is recognized over the duration of the project. Projects may be terminated or delayed by the client or delayed by regulatory authorities for reasons beyond our control. To the extent projects are delayed, the timing of our revenue could be affected. In the event that a client cancels a contract, we typically would be entitled to receive payment for all services performed up to the cancellation date and subsequent client-authorized services related to terminating the canceled project. Typically, however, we have no contractual right to the full amount of the revenue reflected in our backlog in the event of a contract cancellation. The duration of the projects included in our backlog, and the related revenue recognition, range from a few weeks to many years. Our backlog may not be indicative of our future revenues from our Research & Development Solutions business, and we may not realize all the anticipated future revenue reflected in our backlog. A number of factors may affect backlog, including:

- the size, complexity and duration of the projects;
- the percentage of full services versus functional services;
- the cancellation or delay of projects; and
- change in the scope of work during the course of a project.

Although an increase in backlog will generally result in an increase in revenues to be recognized over time (depending on the level of cancellations), an increase in backlog at a particular point in time does not necessarily correspond directly to an increase in revenues during a particular period. The extent to which contracts in backlog will result in revenue depends on many factors, including but not limited to delivery against projected schedules, the need for scope changes (change orders), contract cancellations and the nature, duration, size, complexity and phase of the contracts, each of which factors can vary significantly from time to time.

The rate at which our backlog converts to revenue may vary over time for a variety of reasons. The revenue recognition on larger, more global projects could be slower than on smaller, less global projects for a variety of reasons, including but not limited to an extended period of negotiation between the time the project is awarded to us and the actual execution of the contract, as well as an increased timeframe for obtaining the necessary regulatory approvals. Additionally, the increased complexity of clinical trials and the need to enroll precise patient populations could extend the length of clinical trials causing revenue to be recognized over a longer period of time. Further, delayed projects will remain in backlog, unless otherwise canceled by the client, and will not generate revenue at the rate originally expected. Thus, the relationship of backlog to realized revenues may vary over time.

Our business depends on the continued effectiveness and availability of our information systems, including the information systems we use to provide our services to our clients, and failures of these systems may materially limit our operations.

Due to the global nature of our business and our reliance on information systems to provide our services, we intend to increase our use of web-enabled and other integrated information systems in delivering our services. We also provide access to similar information systems to certain of our clients in connection with the services we provide them. As the breadth and complexity of our information systems continue to grow, we will increasingly be exposed to the risks inherent in the development, integration and ongoing operation of evolving information systems, including:

- disruption, impairment or failure of data centers, telecommunications facilities or other key infrastructure platforms;
- security breaches of, cyberattacks on and other failures or malfunctions in our critical application systems or their associated hardware; and
- excessive costs, excessive delays or other deficiencies in systems development and deployment.

The materialization of any of these risks may impede the processing of data, the delivery of databases and services, and the day-to-day management of our business and could result in the corruption, loss or unauthorized disclosure of proprietary, confidential or other data. While we have disaster recovery plans in place, they might not adequately protect us in the event of a system failure. While many of our operations have disaster recovery plans in place, we currently do not have excess or standby computer processing or network capacity everywhere in the world to avoid disruption in the receipt, processing and delivery of data in the event of a system failure. Despite any precautions we take, damage from fire, floods, hurricanes, power loss, telecommunications failures, computer viruses, break-ins and similar events at our various computer facilities could result in interruptions in the flow of data to our servers and from our servers to our clients. Corruption or loss of data may result in the need to repeat a clinical trial at no cost to the client, but at significant cost to us, the termination of a contract or damage to our reputation.

In addition, any failure by our computer environment to provide sufficient processing or network capacity to transfer data could result in interruptions in our service. In the event of a delay in the delivery of data, we could be required to transfer our data collection operations to an alternative provider of server hosting services. Such a transfer could result in significant delays in our ability to deliver services to our clients and increase our costs. Additionally, significant delays in system enhancements or inadequate performance of new or upgraded systems once completed could damage our reputation and harm our business. Finally, long-term disruptions in the infrastructure caused by events such as natural disasters, the outbreak of war, the escalation of hostilities and acts of terrorism, particularly involving cities in which we have offices, could adversely affect our businesses. Although we carry property and business interruption insurance, our coverage might not be adequate to compensate us for all losses that may occur.

We have continued to undertake significant programs to optimize business processes with respect to our services. Our inability to effectively manage the implementation and adapt to new processes designed into new or upgraded systems in a timely and cost-effective manner may result in disruption to our business and negatively affect our operations.

We have entered into agreements with certain vendors to provide systems development and integration services that develop or license to us the IT platform for programs to optimize our business processes. If such vendors fail to perform as required or if there are substantial delays in developing, implementing and updating the IT platform, our client delivery may be impaired, and we may have to make substantial further investments, internally or with third parties, to achieve our objectives. Additionally, our progress may be limited by parties with existing or claimed patents who seek to enjoin us from using preferred technology or seek license payments from us. Meeting our objectives is dependent on a number of factors which may not take place as we anticipate, including obtaining adequate technology-enabled services, creating IT-enabled services that our clients will find desirable and implementing our business model with respect to these services. Also, increased IT-related expenditures may negatively impact our profitability.

We may experience challenges with the acquisition, development, enhancement or deployment of technology necessary for our business.

We operate in businesses that require sophisticated computer systems and software for data collection, data processing, cloud-based platforms, analytics, cryptography, statistical projections and forecasting, mobile computing, social media analytics and other applications and technologies, particularly in our Technology & Analytics Solutions and Research & Development Solutions businesses. We seek to address our technology risks by increasing our reliance on the use of innovations by cross-industry technology leaders and adapt these for our biopharmaceutical and healthcare industry clients. Some of these technologies supporting the industries we serve are changing rapidly and we must continue to adapt to these changes in a timely and effective manner at an acceptable cost. We also must continue to deliver data to our clients in forms that are easy to use while simultaneously providing clear answers to complex questions. There can be no guarantee that we will be able to develop, acquire or integrate new technologies, that these new technologies will meet our needs or those of our clients' needs or achieve expected investment goals, or that we will be able to do so as quickly or cost-effectively as our competitors. Significant technological change could render certain of our services obsolete. Moreover, the introduction of new services embodying new technologies could render certain of our existing services obsolete. Our continued success will depend on our ability to adapt to changing technologies, manage and process ever-increasing amounts of data and information and improve the performance, features and reliability of our services in response to changing client and industry demands. We may experience difficulties that could delay or prevent the successful design, development, testing, introduction or marketing of our services. New services, or enhancements to existing services, may not adequately meet our own requirements or those of current and prospective clients or achieve any degree of significant market acceptance. These types of failures could have a material adverse effect on our operating results, financial condition and reputation.

Consolidation in the industries in which our clients operate may reduce the volume of services purchased by consolidated clients following an acquisition or merger, which could materially harm our operating results and financial condition.

Mergers or consolidations among our clients have in the past and could in the future reduce the number of our clients and potential clients. When companies consolidate, overlapping services previously purchased separately are usually purchased only once by the combined entity, leading to loss of revenue. Other services that were previously purchased by one of the merged or consolidated entities may be deemed unnecessary or cancelled. If our clients merge with or are acquired by other entities that are not our clients, or that use fewer of our services, they may discontinue or reduce their use of our services. There can be no assurance as to the degree to which we may be able to address the revenue impact of such consolidation. Any of these developments could materially harm our operating results and financial condition.

We may be adversely affected by client or therapeutic concentration.

Although we did not have any client that represented 10% or more of our revenues in 2019, 2018 and 2017, we derive the majority of our revenues from a number of large clients. If any large client decreases or terminates its relationship with us, our business, results of operations or financial condition could be materially adversely affected.

Additionally, conducting multiple clinical trials for different clients in a single therapeutic class involving drugs with the same or similar chemical action has in the past and may in the future adversely affect our business if some or all of the clinical trials are canceled because of new scientific information or regulatory judgments that affect the drugs as a class or if industry consolidation results in the rationalization of drug development pipelines. Similarly, marketing and selling drugs for different biopharmaceutical companies with similar chemical actions subjects us to risk if new scientific information or regulatory judgment prejudices the drugs as a class, which may lead to compelled or voluntary prescription limitations or withdrawal of some or all of such drugs from the market.

Our business is subject to international economic, political and other risks that could negatively affect our results of operations and financial condition.

We have significant operations in countries that may require complex arrangements to deliver services throughout the world for our clients. Additionally, we have established operations in locations remote from our most developed business centers. As a result, we are subject to heightened risks inherent in conducting business internationally, including the following:

- required compliance with a variety of local laws and regulations which may be materially different than those to which we are subject in the United States or which may change unexpectedly; for example, conducting a single clinical trial across multiple countries is complex, and issues in one country, such as a failure to comply with local regulations or restrictions, may affect the progress of the clinical trial in the other countries, for example, by limiting the amount of data necessary for a clinical trial to proceed, resulting in delays or potential cancellation of contracts, which in turn may result in loss of revenue;
- the United States or foreign countries could enact legislation or impose regulations or other restrictions, including unfavorable labor regulations, tax policies or economic sanctions, which could have an adverse effect on our ability to conduct business in or expatriate profits from the countries in which we operate, including hiring, retaining and overseeing qualified management personnel for managing operations in multiple countries, differing employment practices and labor issues, and tax-related risks, including the imposition of taxes and the lack of beneficial treaties, that result in a higher effective tax rate for us;
- foreign countries are expanding or may expand their regulatory framework with respect to patient informed consent, protection and compensation in clinical trials, which could delay or inhibit our ability to conduct clinical trials in such jurisdictions;
- the regulatory or judicial authorities of foreign countries may not enforce legal rights and recognize business procedures in a manner in which we are accustomed or would reasonably expect;
- local, economic, political and social conditions, including potential hyperinflationary conditions, political instability, and potential nationalization, repatriation, expropriation, price controls or other restrictive government actions, including changes in political and economic conditions may lead to changes in the business environment in which we operate, as well as changes in foreign currency exchange rates;

- immigration laws are subject to legislative change and varying standards of application and enforcement due to political forces, economic conditions or other events (including proposals in the U.S. to change limitations on temporary and permanent workers), and local immigration laws may require us to meet certain other legal requirements as a condition to obtaining or maintaining entry visas, which may impact our ability to provide services to our clients;
- potential violations of local laws or anti-bribery laws, such as the United States Foreign Corrupt Practices Act (“FCPA”), and the UK Bribery Act, may cause difficulty in managing foreign operations, as well as significant consequences to us if those laws are violated;
- regulatory changes and economic conditions following the UK’s exit from the EU (“Brexit”), including uncertainties as to its effect on trade laws, tariffs, instability and volatility in the global financial and currency markets, conflicting or redundant regulatory regimes in Europe, such as the European Medicines Agency (“EMA”) possible relocation from UK to a country within the European Union, and political stability;
- clients in foreign jurisdictions may have longer payment cycles, and it may be more difficult to collect receivables in foreign jurisdictions; and
- natural disasters, pandemics such as the COVID-19 (coronavirus), or international conflict, including terrorist acts, could interrupt our services, endanger our personnel, lower patient visits and increase patient drop-out rates, cause delays in recruitment of new patients, decrease the productivity of our clinical research associates, cause other project delays or loss of clinical trial materials or results.

These risks and uncertainties could negatively impact our ability to, among other things, perform large, global projects for our clients. Furthermore, our ability to deal with these issues could be affected by applicable United States laws and the need to protect our assets. Any such risks could have an adverse impact on our financial condition and results of operations.

Exchange rate fluctuations may affect our results of operations and financial condition.

Because a large portion of our revenues and expenses are denominated in currencies other than the United States dollar and our financial statements are reported in United States dollars, changes in foreign currency exchange rates could significantly affect our results of operations and financial condition. Exchange rate fluctuations between local currencies and the United States dollar create risk in several ways, including:

- ***Foreign Currency Translation Risk.*** The revenue and expenses of our foreign operations are generally denominated in local currencies and translated into United States dollars for financial reporting purposes. Accordingly, exchange rate fluctuations will affect the translation of foreign results into United States dollars for purposes of reporting our consolidated results.
- ***Foreign Currency Transaction Risk.*** We are subject to foreign currency transaction risk for fluctuations in exchange rates during the period of time between the consummation and cash settlement of a transaction. We earn revenue from our service contracts over a period of several months and, in some cases, over several years. Accordingly, exchange rate fluctuations during this period may affect our profitability with respect to such contracts.

We may limit these risks through exchange rate fluctuation provisions stated in our service contracts, or we may hedge our transaction risk with foreign currency exchange contracts or options. We have not, however, hedged all of our foreign currency transaction risk, and we may experience fluctuations in financial results from our operations outside the United States and foreign currency transaction risk associated with our service contracts.

Due to the global nature of our business, we may be exposed to liabilities under anti-corruption laws, including the United States Foreign Corrupt Practices Act, the United Kingdom Bribery Act and various international anti-corruption laws, and any allegation or determination that we violated these laws could have a material adverse effect on our business.

We are required to comply with the FCPA, the UK Bribery Act and other international anti-corruption laws, which prohibit companies from engaging in bribery including corruptly or improperly offering, promising, or providing money or anything else of value to non-United States officials and certain other recipients. In addition, the FCPA imposes certain books, records, and accounting control obligations on public companies and other issuers. We operate in parts of the world in which corruption can be common and

compliance with anti-bribery laws may conflict with local customs and practices. Our global operations face the risk of unauthorized payments or offers being made by employees, consultants, sales agents, and other business partners outside of our control or without our authorization. It is our policy to implement safeguards to prohibit these practices by our employees and business partners with respect to our operations. However, irrespective of these safeguards, or as a result of monitoring compliance with such safeguards, it is possible that we or certain other parties may discover or receive information at some point that certain employees, consultants, sales agents, or other business partners may have engaged in corrupt conduct for which we might be held responsible. Violations of the FCPA, the UK Bribery Act or other international anti-corruption laws may result in restatements of, or irregularities in, our financial statements as well as severe criminal or civil sanctions, and we may be subject to other liabilities, which could negatively affect our business, operating results and financial condition. In some cases, companies that violate the FCPA may be debarred by the United States government and/or lose their United States export privileges. Changes in anti-corruption laws or enforcement priorities could also result in increased compliance requirements and related costs which could adversely affect our business, financial condition and results of operations. In addition, the United States or other governments may seek to hold us liable for successor liability FCPA violations or violations of other anti-corruption laws committed by companies in which we invest or that we acquired or will acquire.

We face risks related to sales to government entities.

We derive a portion of our revenue from sales to government entities in the United States. In general, our contracts with United States government entities are terminable at will by the government entity at any time. Government demand and payment for our services may be affected by public-sector budgetary cycles and funding authorizations, including government shutdowns. Government contracts are subject to oversight, including special rules on accounting, expenses, reviews and security. Failure to comply with these rules could result in civil and criminal penalties and sanctions, including termination of contracts, fines and suspensions, or debarment from future business with the United States government. As a result, failure to comply with these rules could have an adverse effect on our future business, reputation, operating results and financial condition.

If we are unable to successfully develop and market new services or enter new markets, our growth, results of operations or financial condition could be adversely affected.

A key element of our growth strategy is the successful development and marketing of new services or entering new markets that complement or expand our existing business. As we develop new services or enter new markets, including services targeted at participants in the broader healthcare industry, we may not have or adequately build the competencies necessary to perform such services satisfactorily, may not receive market acceptance for such services or may face increased competition. If we are unable to succeed in developing new services, entering new markets or attracting a client base for our new services or in new markets, we will be unable to implement this element of our growth strategy, and our future business, reputation, results of operations and financial condition could be adversely affected.

Our Research & Development Solutions business could subject us to potential liability that may adversely affect our results of operations and financial condition.

Our Research & Development Solutions business involves the testing of new drugs on patients in clinical trials and, if marketing approval is granted, the availability of these drugs to be prescribed to patients. Our involvement in the clinical trials and development process creates a risk of liability for personal injury to or death of patients, particularly those with life-threatening illnesses, resulting from adverse reactions to the drugs administered during testing or after product launch, respectively. For example, we have from time to time been sued and may be sued in the future by individuals alleging personal injury due to their participation in clinical trials and seeking damages from us under a variety of legal theories. Although we maintain the types and amounts of insurance we view as customary in the industries and countries in which we operate, if we are required to pay damages or incur defense costs in connection with any personal injury claim that is outside the scope of indemnification agreements we have with our clients, if any indemnification agreement is not performed in accordance with its terms or if our liability exceeds the amount of any applicable indemnification limits or available insurance coverage, our financial condition, results of operations and reputation could be materially and adversely affected. We maintain professional liability insurance, including liability for completed operations coverage. In the future, we may not be able to get adequate insurance for these types of risks at reasonable rates.

We also contract with physicians to serve as investigators in conducting clinical trials. If the investigators commit errors or make omissions during a clinical trial that result in harm to clinical trial patients or after a clinical trial to a patient using the drug after it has received regulatory approval, claims for personal injury or liability damages may result. Additionally, if the investigators engage in fraudulent behavior, clinical trial data may be compromised, which may require us to repeat the clinical trial or subject us to liability. We do not believe we are legally responsible for the medical care rendered by such third-party investigators, and we would vigorously defend any claims brought against us. However, it is possible we could be found liable for claims with respect to the actions of third-party investigators, which may adversely affect our financial condition, results of operations and reputation.

Some of our services involve direct interaction with clinical trial subjects or volunteers and subcontracting into a network of Phase I clinical facilities, which could create potential liability that may adversely affect our results of operations, financial condition and reputation.

We subcontract into a network of facilities where Phase I clinical trials are conducted, which ordinarily involve testing an investigational drug on a limited number of healthy individuals, typically 20 to 80 persons, to determine such drug's basic safety. Failure to operate such a facility in accordance with applicable regulations could result in that facility being shut down, which could disrupt our operations. Additionally, we face risks associated with adverse events resulting from the administration of such drugs to healthy volunteers and the professional malpractice of medical care providers. Any professional malpractice or negligence by such investigators, nurses or other subcontracted employees could potentially result in liability to us in the event of personal injury to or death of a healthy volunteer in clinical trials, and could also cause us reputational harm. This liability, particularly if it were to exceed the limits of any indemnification agreements and insurance coverage we may have, may adversely affect our financial condition, results of operations and reputation.

Our Contract Sales & Medical Solutions business could result in liability to us if a drug causes harm to a patient. While we are generally indemnified and insured against such risks, we may still suffer financial losses.

When we market drugs under contract for a biopharmaceutical company, we could suffer liability for harm allegedly caused by those drugs, either as a result of a lawsuit against the biopharmaceutical company to which we are joined, a lawsuit naming us or any of our subsidiaries or an action launched by a regulatory body. While we are generally indemnified by the biopharmaceutical company for the action of the drugs we market on its behalf, and we carry insurance to cover harm caused by our negligence in performing services, it is possible that we could nonetheless incur financial losses, regulatory penalties or both. In particular, any claim could result in potential liability for us if the claim is outside the scope of the indemnification agreement we have with the biopharmaceutical company, the biopharmaceutical company does not abide by the indemnification agreement as required or the liability exceeds the amount of any applicable indemnification limits or available insurance coverage. Such a finding could have an adverse impact on our financial condition, results of operations and reputation. Furthermore, negative publicity associated with harm caused by drugs we helped to market could have an adverse effect on our business and reputation.

Our insurance may not cover all of our indemnification obligations and other liabilities associated with our operations.

We maintain insurance designed to provide coverage for ordinary risks associated with our operations and our ordinary indemnification obligations. The coverage provided by such insurance may not be adequate for all claims we may make or may be contested by our insurance carriers. If our insurance is not adequate or available to pay liabilities associated with our operations, or if we are unable to purchase adequate insurance at reasonable rates in the future, our profitability may be adversely impacted.

If we are unable to attract suitable investigators and patients for our clinical trials, our clinical development business might suffer.

The timely recruitment of investigators and patients for clinical trials is essential to our Research & Development Solutions business. Investigators are typically located at hospitals, clinics or other sites and supervise the administration of the investigational drug to patients during the course of a clinical trial. Patients generally include people from the communities in which the clinical trials are conducted. Our clinical development business could be adversely affected if we are unable to attract suitable and willing investigators or patients for clinical trials on a consistent basis. For example, if we are unable to engage investigators to conduct clinical trials as planned or enroll sufficient patients in clinical trials, we might need to expend additional funds to obtain access to resources or else be compelled to delay or modify the clinical trial plans, which may result in additional costs to us.

If we lose the services of key personnel or are unable to recruit additional qualified personnel, our business could be adversely affected.

Our success substantially depends on the collective performance, contributions and expertise of our personnel including senior management and key personnel, qualified professional, scientific and technical operating staff and qualified sales representatives for our contract sales services. There is significant and increasing competition for qualified personnel, particularly those with higher educational degrees, such as a medical degree, a Ph.D. or an equivalent degree, or relevant experience in the industry and in the locations in which we operate. In addition, the departure of our key employees, or our inability to continue to identify, attract and retain qualified personnel or replace any departed personnel in a timely fashion, may impact our ability to grow our business and compete effectively in our industry and may negatively affect our ability to meet financial and operational goals.

Disruptions in the credit and capital markets and unfavorable general economic conditions could negatively affect our business, results of operations and financial condition.

Disruptions in the credit and capital markets could have negative effects on our business that may be difficult to predict or anticipate, including the ability of our clients, vendors, contractors and financing sources to meet their contractual obligations. Although we are unable to quantify the impact it has had on us, we are aware of a limited number of instances in our Research & Development Solutions business during the past several years where cancellations, changes in scope and failure to pay timely were attributable, at least in part, to difficulty in our clients' ability to obtain financing. In the future such actions by our clients could, if they involve a significant amount of business with us, have a material adverse effect on our results of operations.

Our effective income tax rate may fluctuate for a variety of reasons, including the Tax Cuts and Jobs Act enacted in 2017 (the "Tax Act"), which may adversely affect our operations, earnings and earnings per share.

Our effective income tax rate is influenced by our projected profitability in the various taxing jurisdictions in which we operate. Changes in a jurisdiction's income tax rates and the distribution of our profits and losses among such jurisdictions may have a significant impact on our effective income tax rate, which in turn could have an adverse effect on our net income and earnings per share. Factors that may affect our effective income tax rate include, but are not limited to:

- the requirement to exclude from our quarterly worldwide effective income tax calculations losses in jurisdictions where no income tax benefit can be recognized;
- actual and projected full year pre-tax income;
- changes in the value of deferred tax assets and liabilities;
- the repatriation of foreign earnings to the United States;
- changes in tax laws in various jurisdictions, including the Tax Act;
- audits by taxing authorities; and
- the establishment of valuation allowances against deferred income tax assets if we determined that it is more likely than not that future income tax benefits will not be realized.

In addition, our effective income tax rate is influenced by U.S. tax law which has been substantially modified by the Tax Act. Currently, regulations have been issued in proposed form, and if the application of these provisions are modified to change the interpretation to us it could have an adverse impact on our effective income tax rate:

- Global Intangible Low-Taxed Income ("GILTI");
- Deduction for net business interest limited to 30% of adjusted taxable income; and
- Performance-based compensation and commissions now subject to \$1 million limit.

All of these items described above may cause fluctuations in our effective income tax rate through increased U.S. tax liability and/or the loss of tax attributes in any given year that could adversely affect our results of operations and impact our earnings and earnings per share. Additional information regarding our income taxes is presented in Note 16 to our audited consolidated financial statements included in this Annual Report on Form 10-K.

Changes in accounting standards issued by the Financial Accounting Standards Board ("FASB") or other standard-setting bodies may adversely affect our financial statements.

We are required to prepare our financial statements in accordance with generally accepted accounting principles in the United States of America ("GAAP"), which is periodically revised and/or expanded. From time to time, we are required to adopt new or revised accounting standards issued by recognized authoritative bodies, including the FASB and the SEC. It is possible that future accounting standards we are required to adopt, such as amended guidance for leases, may require additional changes to the current accounting treatment that we apply to our financial statements and may require us to make significant changes to our reporting systems. Such changes could result in a material adverse impact on our results of operations and financial condition.

Our relationships with existing or potential clients who are in competition with each other may adversely impact the degree to which other clients or potential clients use our services, which may adversely affect our results of operations.

The biopharmaceutical industry is highly competitive, with biopharmaceutical companies each seeking to persuade payers, providers and patients that their drug therapies are better and more cost-effective than competing therapies marketed or being developed by competing firms. In addition to the adverse competitive interests that biopharmaceutical companies have with each other, biopharmaceutical companies also have adverse interests with respect to drug selection and reimbursement with other participants in the healthcare industry, including payers and providers. Biopharmaceutical companies also compete to be first to market with new drug therapies. We regularly provide services to biopharmaceutical companies who compete with each other, and we sometimes provide services or funding to such clients regarding competing drugs in development. Our existing or future relationships with our biopharmaceutical clients may therefore deter other biopharmaceutical clients from using our services or may result in our clients seeking to place limits on our ability to serve other biopharmaceutical industry participants in connection with drug development activities. In addition, our further expansion into the broader healthcare market may adversely impact our relationships with biopharmaceutical clients, and such clients may elect not to use our services, reduce the scope of services that we provide to them or seek to place restrictions on our ability to serve clients in the broader healthcare market with interests that are adverse to theirs. A loss of clients or reductions in the level of revenues from a client could have a material adverse effect on our results of operations, business and prospects.

If we are unable to successfully identify, acquire and integrate existing businesses, services and technologies, our business, results of operations and financial condition could be adversely impacted.

We anticipate that a portion of our future growth may come from acquiring existing businesses, services or technologies. The success of any acquisition will depend upon, among other things, our ability to effectively integrate acquired personnel, operations, services and technologies into our business and to retain the key personnel and clients of our acquired businesses. In addition, we may be unable to identify suitable acquisition opportunities or obtain any necessary financing on commercially acceptable terms. We may also spend time and money investigating and negotiating with potential acquisition targets but not complete the transaction. Any future acquisition could involve other risks, including, among others, the assumption of additional liabilities and expenses, difficulties and expenses in connection with integrating the acquired companies and achieving the expected benefits, issuances of potentially dilutive securities or interest-bearing debt, loss of key employees of the acquired companies, transaction costs, diversion of management's attention from other business concerns and, with respect to the acquisition of foreign companies, the inability to overcome differences in foreign business practices, language and customs. Our failure to identify potential acquisitions, complete targeted acquisitions and integrate completed acquisitions could have a material adverse effect on our business, financial condition and results of operations.

Investments in our clients' businesses or drugs and our related commercial rights strategies could have a negative impact on our financial performance.

We may enter into arrangements with our clients or other drug companies in which we take on some of the risk of the potential success or failure of their businesses or drugs, including making strategic investments in our clients or other drug companies, providing financing to clients or other drug companies or acquiring an interest in the revenues from clients' drugs or in entities developing a limited number of drugs. Our financial results would be adversely affected if these investments or the underlying drugs result in losses or do not achieve the level of success that we anticipate and/or our return or payment from the drug investment or financing is less than our direct and indirect costs with respect to these arrangements.

Our results of operations may be adversely affected if we fail to realize the full value of our goodwill and intangible assets.

We assess the realizability of our indefinite-lived intangible assets and goodwill annually and conduct an interim evaluation whenever events or changes in circumstances, such as operating losses or a significant decline in earnings associated with the acquired business or asset, indicate that these assets may be impaired. For example, we recognized \$40 million of impairment losses during the year ended December 31, 2017, for goodwill and intangible assets in Encore Health Resources LLC ("Encore"), which we sold in the third quarter of 2017. Our ability to realize the value of the goodwill and indefinite-lived intangible assets will depend on the future cash flows of the businesses we have acquired, which in turn could depend in part on how well we have integrated these businesses into our own business. If we are not able to realize the value of the goodwill and indefinite-lived intangible assets, we may be required to incur material charges relating to the impairment of those assets. Such impairment charges could materially and adversely affect our operating results and financial condition.

We face risks arising from the restructuring of our operations.

From time to time, we have adopted restructuring plans to improve our operating efficiency through various means such as reduction of overcapacity, elimination of non-billable support roles or other realignment of resources. Restructuring presents significant potential risks of events occurring that could adversely affect us, including:

- actual or perceived disruption of service or reduction in service standards to clients;
- the failure to preserve supplier relationships and distribution, sales and other important relationships and to resolve conflicts that may arise;
- loss of sales as we reduce or eliminate staffing on non-core services;
- diversion of management attention from ongoing business activities; and
- the failure to maintain employee morale and retain key employees.

Further, any such restructuring would result in charges that, if material, could harm our results of operations and significantly reduce our cash position or increase debt. In addition, we may incur certain unforeseen costs once any restructuring activities are implemented. Further, if we determine to effect any restructuring, we can give no assurance that any projected cost reductions resulting from such restructuring activities will be achieved within the expected timeframe, or at all.

Because of these and other factors, we cannot predict whether we will realize the purpose and anticipated benefits of these measures and, if we do not, our business and results of operations may be adversely affected.

Additionally, there may be delays in implementing the restructuring activities or a failure to achieve the anticipated levels of cost savings and efficiency as a result of the restructuring activities, each of which could materially and adversely impact our business and results of operations. Further restructuring or reorganization activities may also be required in the future beyond what is currently planned, which could further enhance the risks associated with these activities.

Risks Relating to Our Industry

The biopharmaceutical services industry is highly competitive.

The biopharmaceutical services industry is highly competitive. Our business often competes with other biopharmaceutical services companies, internal discovery departments, development departments, sales and marketing departments, information technology departments and other departments within our clients, some of which could be considered large biopharmaceutical services companies in their own right with greater resources than ours. We also compete with universities, teaching hospitals, governments agencies and others. If we do not compete successfully, our business will suffer. The biopharmaceutical services industry is highly fragmented, with numerous smaller specialized companies and a handful of companies with global capabilities similar to certain of our own capabilities. Increased competition has led to price and other forms of competition, such as acceptance of less favorable contract terms, that could adversely affect our operating results. There are few barriers to entry for companies considering offering any one or more of the services we offer. Because of their size and focus, these companies might compete effectively against us, which could have a material adverse impact on our business.

Our future growth and success will depend on our ability to successfully compete with other companies that provide similar services in the same markets, some of which may have financial, marketing, technical and other advantages. We also expect that competition will continue to increase as a result of consolidation among these various companies. Large technology companies with substantial resources, technical expertise and greater brand power could also decide to enter or further expand in the markets where our business operates and compete with us. If one or more of our competitors or potential competitors were to merge or partner with another of our competitors, or if a new entrant emerged with substantial resources, the change in the competitive landscape could adversely affect our ability to compete effectively. We compete on the basis of various factors, including breadth and depth of services, reputation, reliability, quality, geographic coverage, innovation, security, price and industry expertise and experience. In addition, our ability to compete successfully may be impacted by the growing availability of health information from social media, government health information systems and other free or low-cost sources. Consolidation or integration of wholesalers, retail pharmacies, health networks, payers or other healthcare stakeholders may lead any of them to provide information services directly to clients or indirectly through a designated service provider, resulting in increased competition from firms that may have lower costs to market (e.g., no data supply costs). Any of the above may result in lower demand for our services, which could result in a material adverse impact on our operating results and financial condition.

Outsourcing trends in the biopharmaceutical industry and changes in aggregate spending and research and development budgets could adversely affect our operating results and growth rate.

Economic factors and industry trends that affect biopharmaceutical companies affect our Research & Development Solutions business. Biopharmaceutical companies continue to seek long-term strategic collaborations with global contract research organizations with favorable pricing terms. Competition for these collaborations is intense and we may decide to forego an opportunity or we may not be selected, in which case a competitor may enter into the collaboration and our business with the client, if any, may be limited. In addition, if the biopharmaceutical industry reduces its Research & Development Solutions activities or reduces its outsourcing of clinical trials and sales and marketing projects or such outsourcing fails to grow at projected rates, our operations and financial condition could be materially and adversely affected. We may also be negatively impacted by consolidation and other factors in the biopharmaceutical industry, which may slow decision making by our clients or result in the delay or cancellation of clinical trials. Our commercial services may be affected by reductions in new drug launches and increases in the number of drugs losing patent protection. All of these events could adversely affect our business, results of operations or financial condition.

Our business may be materially and adversely impacted by factors affecting the biopharmaceutical and healthcare industries.

The vast majority of our revenue is generated from sales to the biopharmaceutical and healthcare industries. The clients we serve in these industries are commonly subject to financial pressures, including, but not limited to, increased costs, reduced demand for their products, reductions in pricing and reimbursement for products and services, formulary approval and placement, government approval to market their products and limits on the manner by which they market their products, loss of patent exclusivity (whether due to patent expiration or as a result of a successful legal challenge) and the proliferation of or changes to regulations applicable to these industries. To the extent our clients face such pressures, or they change how they utilize our offerings, the demand for our services, or the prices our clients are willing to pay for those services, may decline. Any such decline could have a material adverse effect on our business, operating results and financial condition.

We may be affected by healthcare reform and potential additional reforms.

The United States Congress continues to consider healthcare reform legislation and impose health industry cost containment measures, which may significantly impact the biopharmaceutical industry. In addition, numerous government bodies are considering or have adopted various healthcare reforms and may undertake, or are in the process of undertaking, efforts to control growing healthcare costs through legislation, regulation and voluntary agreements with medical care providers and biopharmaceutical companies. We are uncertain as to the effects of these recent reforms on our business and are unable to predict what legislative proposals, if any, will be adopted in the future. If regulatory cost containment efforts limit the profitability of new drugs, our clients may reduce their research and development spending or promotional, marketing and sales expenditures, which could reduce the business they outsource to us. Similarly, if regulatory requirements are relaxed or simplified drug approval procedures are adopted, the demand for our services could decrease.

Foreign and domestic government bodies may also adopt healthcare legislation or regulations that are more burdensome than existing regulations. For example, product safety concerns and recommendations by the Drug Safety Oversight Board could change the regulatory environment for drug products, and new or heightened regulatory and licensing requirements may increase our expenses or limit or delay our ability to offer some of our services. Additionally, new or heightened regulatory requirements may have a negative impact on the ability of our clients to conduct industry-sponsored clinical trials, which could reduce the need for our services.

Actions by government regulators or clients to limit a prescription's scope or withdraw an approved drug from the market could adversely affect our business and result in a loss of revenues.

Government regulators have the authority, after approving a drug, to regulate or limit its scope of prescription or withdraw it from the market completely based on safety concerns. Similarly, clients may act to voluntarily limit the scope of prescription of drugs or withdraw them from the market. In the past, we have provided services with respect to drugs that have been limited and/or withdrawn. If we are providing services to clients for drugs that are limited or withdrawn, we may be required to narrow the scope of or terminate our services with respect to such drugs, which would prevent earning the full amount of revenues anticipated under the related service contracts with negative impacts to our financial results.

If we do not keep pace with rapid technological changes, our services may become less competitive or obsolete.

The biopharmaceutical industry is subject to rapid technological changes. Our current competitors or other businesses might develop technologies or services that are more effective or commercially attractive than, or render obsolete, our current or future technologies and services. If our competitors introduce superior technologies or services, including in the provision of clinical services, and if we cannot make enhancements to remain competitive, our competitive position would be harmed. If we are unable to compete successfully, we may lose clients or be unable to attract new clients, which could lead to a decrease in our revenue and financial condition.

Laws restricting biopharmaceutical sales and marketing practices may adversely impact demand for our services.

There have been a significant number of laws, legislative initiatives and regulatory actions over the years that seek to limit biopharmaceutical sales and marketing practices. For example, three states in 2006 and 2007 passed laws restricting the use of prescriber identifiable information for the purpose of promoting branded prescription medicines. Although these laws were subsequently declared to be unconstitutional based on a decision of the U.S. Supreme Court in *Sorrell v. IMS Health* in 2011, we are unable to predict whether, and in what form, other initiatives may be introduced or actions taken at the state or Federal levels to limit biopharmaceutical sales and marketing practices. In addition, while we will continue to seek to adapt our services to comply with the requirements of these laws (to the extent applicable to our services), if enacted, there can be no assurance that our efforts to adapt our offerings will be successful and provide the same financial contribution to us. There can also be no assurance that future legislative initiatives will not adversely affect our ability to develop or market current or future offerings, or that any future laws will not diminish the demand for our services, all of which could, over time, result in a material adverse impact on our operating results and financial condition.

Our Research & Development Solutions clients face intense competition from lower cost generic products, which may lower the amount that they spend on our services.

Our Research & Development Solutions clients face increasing competition from lower cost generic products, which in turn may affect their ability to pursue research and development activities with us. In the United States, EU and Japan, political pressure to reduce spending on prescription drugs has led to legislation and other measures which encourages the use of generic products. In addition, proposals emerge from time to time in the United States and other countries for legislation to further encourage the early and

rapid approval of generic drugs. Loss of patent protection for a product typically is followed promptly by generic substitutes, reducing our clients' sales of that product and their overall profitability. Availability of generic substitutes for our clients' drugs may adversely affect their results of operations and cash flow, which in turn may mean that they would not have surplus capital to invest in research and development and drug commercialization, including in our services. If competition from generic products impacts our clients' finances such that they decide to curtail our services, our revenues may decline and this could have a material adverse effect on our business.

Risks Relating to Our Indebtedness

Restrictions imposed in the Senior Secured Credit Facilities (as defined below) and other outstanding indebtedness, including the indentures governing outstanding notes issued by our wholly owned subsidiary IQVIA Inc., may limit our ability to operate our business and to finance our future operations or capital needs or to engage in other business activities.

The terms of the Senior Secured Credit Facilities restrict IQVIA and its restricted subsidiaries from engaging in specified types of transactions. These covenants restrict the ability of IQVIA and its restricted subsidiaries, among other things, to:

- incur liens;
- make investments and loans;
- incur indebtedness or guarantees;
- issue preferred stock of a restricted subsidiary;
- issue disqualified equity;
- engage in mergers, acquisitions and asset sales;
- declare dividends, make payments or redeem or repurchase equity interests;
- alter the business IQVIA and its restricted subsidiaries conduct;
- make restricted payments;
- enter into agreements limiting restricted subsidiary distributions;
- prepay, redeem or purchase certain indebtedness; and
- engage in certain transactions with affiliates.

In addition, the revolving credit facility and the term A and B loans under the Credit Agreement (as defined below) require IQVIA to comply with a quarterly maximum senior secured net leverage ratio test and minimum interest coverage ratio test. IQVIA's ability to comply with these financial covenants can be affected by events beyond our control, and IQVIA may not be able to satisfy them. Additionally, the restrictions contained in the indentures governing the outstanding notes could also limit our ability to plan for or react to market conditions, meet capital needs or make acquisitions or otherwise restrict our activities or business plans.

A breach of any of these covenants could result in a default under the Senior Secured Credit Facilities or the indentures governing the outstanding notes, which could trigger acceleration of our indebtedness and may result in the acceleration of or default under any other debt to which a cross-acceleration or cross-default provision applies, which could have a material adverse effect on our business, operations and financial results. In the event of any default under the Senior Secured Credit Facilities, the applicable lenders could elect to terminate borrowing commitments and declare all borrowings and loans outstanding, together with accrued and unpaid interest and any fees and other obligations, to be due and payable. In addition, or in the alternative, the applicable lenders could exercise their rights under the security documents entered into in connection with the Senior Secured Credit Facilities. IQVIA and the other subsidiary guarantors have pledged substantially all of their tangible and intangible assets (subject to customary exceptions) as collateral under the Senior Secured Credit Facilities, including the stock and the assets of certain of our current and future wholly owned United States subsidiaries and a portion of the stock of certain of our non-United States subsidiaries.

If we were unable to repay or otherwise refinance these borrowings and loans when due, the applicable lenders could proceed against the collateral granted to them to secure that indebtedness, which could force us into bankruptcy or liquidation. In the event the applicable lenders accelerate the repayment of our borrowings, we and our subsidiaries may not have sufficient assets to repay that indebtedness. Any acceleration of amounts due under the Credit Agreement governing the Senior Secured Credit Facilities or the exercise by the applicable lenders of their rights under the security documents would likely have a material adverse effect on us.

Despite our level of indebtedness, we are able to incur more debt and undertake additional obligations. Incurring such debt or undertaking such additional obligations could further exacerbate the risks to our financial condition.

Although the Credit Agreement, which governs the Senior Secured Credit Facilities of our wholly owned subsidiary through which we conduct our operations, IQVIA Inc., contains restrictions on the incurrence of additional indebtedness, these restrictions are subject to a number of qualifications and exceptions and the indebtedness incurred in compliance with these restrictions could increase. In addition, the receivables financing facility for one of our consolidated subsidiaries, a bankruptcy-remote special purpose entity (the “SPE”) limits borrowing based on the amount of receivables purchased by the SPE from certain of our other subsidiaries, but when supported by the value of such purchased receivables, the debt under our receivables financing facility can increase.

While the Credit Agreement also contains restrictions on our and our restricted subsidiaries’ ability to make loans and investments, these restrictions are subject to a number of qualifications and exceptions, and the investments incurred in compliance with these restrictions could be substantial.

Restrictive covenants in our other indebtedness may limit our flexibility in our current and future operations, particularly our ability to respond to changes in our business or to pursue our business strategies.

The terms contained in certain of our indebtedness, including credit facilities and any future indebtedness of ours, may include a number of restrictive covenants that impose significant operating and financial restrictions, including restrictions on our and our restricted subsidiaries’ ability to take actions that we believe may be in our interest. These agreements, among other things, limit our ability to:

- incur additional debt;
- provide guarantees in respect of obligations of other persons;
- issue redeemable stock and preferred stock;
- pay dividends or distributions or redeem or repurchase capital stock;
- prepay, redeem or repurchase debt;
- make loans, investments and capital expenditures;
- enter into transactions with affiliates;
- create or incur liens;
- make distributions from our subsidiaries;
- sell assets and capital stock of our subsidiaries;

- make acquisitions; and
- consolidate or merge with or into, or sell substantially all of our assets to, another person.

A breach of the covenants or restrictions under the agreements governing our other indebtedness could result in a default under the applicable indebtedness. Such default may allow the creditors to accelerate the related debt and may result in the acceleration of any other debt to which a cross-acceleration or cross-default provision applies. In the event our lenders and noteholders accelerate the repayment of our borrowings, we cannot assure that we and our subsidiaries would have sufficient assets to repay such indebtedness.

Our financial results, our substantial indebtedness and our credit ratings could adversely affect the availability and terms of future financing.

Interest rate fluctuations and our ability to deduct interest expense may affect our results of operations and financial condition.

Because we have variable rate debt, fluctuations in interest rates affect our business. We attempt to minimize interest rate risk and lower our overall borrowing costs through the utilization of derivative financial instruments, primarily interest rate caps and swaps. We have entered into interest rate caps and swaps with financial institutions that have reset dates and critical terms that match those of our senior secured term loan credit facility. Accordingly, any change in market value associated with the interest rate caps and swaps is offset by the opposite market impact on the related debt. Because we do not attempt to hedge all of our variable rate debt, we may incur higher interest costs for the portion of our variable rate debt which is not hedged.

In addition, the deduction for our interest expense may be limited, which could have an adverse impact on our taxes and net income.

We may be adversely affected by changes in the method of determining the London Interbank Offered Rate (“LIBOR”), or the replacement of LIBOR with an alternative reference rate, for our variable rate loans, derivative contracts and other financial assets and liabilities.

The interest rates under our credit facilities and related interest rate swaps may be impacted by the expected discontinuation of LIBOR. LIBOR is used as a reference rate to calculate interest rates under our credit facilities. In 2017, the United Kingdom's Financial Conduct Authority, which regulates LIBOR, announced that it intends to phase out LIBOR by the end of 2021. It is unclear if LIBOR will cease to exist at that time or if new methods of calculating LIBOR will be established such that it continues to exist after 2021. The banking industry alongside regulators have taken steps to introduce alternative reference rates to LIBOR particularly in the US, the UK and Switzerland. Whether or not alternative reference rates attain market traction as a LIBOR replacement tool remains in question. If LIBOR ceases to exist or another indexed rate gains wide market acceptance as the successor to LIBOR, our lenders will select a replacement index that will be applied under our credit facilities and related interest rate swaps, and certain of the interest rates under our credit facilities may change. The new rates may not be as favorable to us as those in effect prior to any LIBOR phase-out.

Risks Relating to Ownership of Our Common Stock

Provisions of the corporate governance documents of IQVIA could make an acquisition of IQVIA difficult and may prevent attempts by its stockholders to replace or remove its management, even if beneficial to its stockholders.

Our certificate of incorporation and Delaware bylaws and the General Corporation Law of Delaware (the “DGCL”) contain provisions that could make it difficult for a third party to acquire IQVIA even if doing so might be beneficial to its stockholders, including:

- the division of the board of directors into three classes and the election of each class for three-year terms;
- the sole ability of the board of directors to fill a vacancy created by the death or resignation of a director or the expansion of the board of directors;
- advance notice requirements for stockholder proposals and director nominations;
- limitations on the ability of stockholders to call special meetings and to take action by written consent;

- the approval of holders of at least seventy-five percent (75%) of the outstanding shares of IQVIA entitled to vote on any amendment, alteration, change, addition or repeal of the Delaware bylaws is required to amend, alter, change, add to or repeal the Delaware bylaws;
- the required approval of holders of at least seventy-five percent (75%) of the outstanding shares of IQVIA to remove directors, which removal may only be for cause; and
- the ability of the board of directors to issue new series of, and designate the terms of, preferred stock, without stockholder approval, which could be used to, among other things, institute a rights plan that would have the effect of significantly diluting the stock ownership of a potential hostile acquirer, likely preventing acquisitions that have not been approved by the board of directors.

In addition, IQVIA is subject to Section 203 of the DGCL regulating corporate takeovers. Section 203, subject to certain exceptions, prohibits a Delaware corporation from engaging in any “business combination” with any “interested stockholder” for a period of three years following the date that such stockholder became an interested stockholder unless:

- prior to such date, the board of directors of the corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;
- upon consummation of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding those shares owned by persons who are directors and also officers, and employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- on or subsequent to such date, the business combination is approved by the board of directors and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least two-thirds of the outstanding voting stock that is not owned by the interested stockholder.

In general, Section 203 defines “business combination” to include mergers or consolidations between a Delaware corporation and an interested stockholder, transactions with an interested stockholder involving the assets or stock of the corporation or its majority-owned subsidiaries and transactions which increase an interested stockholder’s percentage ownership of stock. In general, Section 203 defines an “interested stockholder” as any entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation and any entity or person affiliated with or controlling or controlled by such entity or person. These provisions may frustrate or prevent any attempts by stockholders to replace members of the board of directors. Because IQVIA’s board is responsible for appointing the members of management, these provisions could in turn affect any attempt to replace current members of management. As a result, stockholders of IQVIA may lose their ability to sell their stock for a price in excess of the prevailing market price due to these protective measures, and efforts by stockholders to change the direction or management of IQVIA may be unsuccessful.

Our operating results and share price may be volatile, which could cause the value of our stockholders’ investments to decline.

Our quarterly and annual operating results may fluctuate in the future, and such fluctuations may be significant. In addition, securities markets worldwide have experienced, and are likely to continue to experience, significant price and volume fluctuations. This market volatility, as well as general economic, market or political conditions, could subject the market price of our shares to wide price fluctuations regardless of our operating performance. Our operating results and the trading price of our shares may fluctuate in response to various factors, including:

- market conditions in the broader stock market;
- actual or anticipated fluctuations in our quarterly and annual financial and operating results;
- introduction of new services by us or our competitors;
- issuance of new or changed securities analysts’ reports or recommendations;

- sales, or anticipated sales, of large blocks of our stock;
- additions or departures of key personnel;
- regulatory or political developments;
- litigation and governmental investigations;
- changing economic conditions; and
- exchange rate fluctuations.

These and other factors, many of which are beyond our control, may cause our operating results and the market price for our shares to fluctuate substantially. While we believe that operating results for any particular quarter are not necessarily a meaningful indication of future results, fluctuations in our quarterly operating results could limit or prevent investors from readily selling their shares and may otherwise negatively affect the market price and liquidity of our shares. In addition, in the past, when the market price of a stock has been volatile, holders of that stock have sometimes instituted securities class action litigation against the company that issued the stock. If any of our stockholders brought a lawsuit against us, we could incur substantial costs defending the lawsuit. Such a lawsuit could also divert the time and attention of our management from our business, which could significantly harm our profitability and reputation.

Since we have no current plans to pay regular cash dividends on our common stock, stockholders may not receive any return on investment unless they sell their common stock for a price greater than that which they paid for it.

Although we have previously declared dividends to our stockholders prior to our initial public offering in May 2013, we do not currently anticipate paying any regular cash dividends on our common stock. Any decision to declare and pay dividends in the future will be made at the discretion of our Board and will depend on, among other things, our results of operations, financial condition, cash requirements, contractual restrictions and other factors that our Board may deem relevant. In addition, our ability to pay dividends is, and may be, limited by covenants of existing and any future outstanding indebtedness we or our subsidiaries incur, including under our existing credit facilities. Therefore, any return on investment in our common stock is solely dependent upon the appreciation of the price of our common stock on the open market, which may not occur.

Our certificate of incorporation contains a provision renouncing any interest and expectancy in certain corporate opportunities identified by certain of our affiliates, even if such corporate opportunities are ones that we might reasonably be deemed to have pursued or had the ability or desire to pursue.

Our certificate of incorporation provides that IQVIA renounces any interest or expectancy in the business opportunities of the TPG Global, LLC, the Bain Capital, LLC, CPP Investment Board Private Holdings Inc., and Leonard Green & Partners, L.P., and their affiliates (other than our Company and our subsidiaries) and all of their respective partners, principals, directors, officers, members, managers, managing directors and/or employees, and each such person will have no obligation to offer us such opportunities. This provision applies to each of these stockholders (and associated parties) only for so long as a nominee designated by such stockholder under the Shareholders Agreement continues to serve on our board of directors and no individual serving our board of directors has at any time been designated as a nominee by such stockholder under the Shareholders Agreement. Stockholders are deemed to have notice of and have consented to this provision of our certificate of incorporation.

Therefore, a director or officer of our Company who also serves as a director, officer, member, manager, or employee of such stockholders may pursue certain business opportunities, including acquisitions, that may be complementary to its business and, as a result, such opportunities may not be available to us. These potential conflicts of interest could have a material adverse effect on the business, financial condition, results of operations, or prospects of our company if attractive corporate opportunities are allocated by such stockholders to themselves or their other affiliates instead of to us.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

As of December 31, 2019, we had approximately 303 offices located in approximately 82 countries. Our executive headquarters are located adjacent to Research Triangle Park, North Carolina and in Danbury, Connecticut. We own facilities in Buenos Aires, Argentina; Caracas, Venezuela; Los Ruices, Venezuela; and Bangalore, India. All of our other offices are leased. Our properties are geographically distributed to meet our worldwide operating requirements, and none of our properties are individually material to our business operations. Many of our leases have an option to renew, and we believe that we will be able to successfully renew expiring leases on terms satisfactory to us. We believe that our facilities are adequate for our operations and that suitable additional space will be available if needed.

Item 3. Legal Proceedings

Information pertaining to legal proceedings can be found in Note 12 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K and is incorporated by reference herein.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market Information for Common Stock

Our common stock trades on the NYSE under the symbol “IQV.”

Holder of Record

On February 7, 2020, we had approximately 35 stockholders of record as reported by our transfer agent. Holders of record are defined as those stockholders whose shares are registered in their names in our stock records and do not include beneficial owners of common stock whose shares are held in the names of brokers, dealers or clearing agencies.

Dividend Policy

We do not currently intend to pay dividends on our common stock, and no dividends were declared or paid in 2019 or 2018. However, we expect to reevaluate our dividend policy on a regular basis and may, subject to compliance with the covenants contained in our Senior Secured Credit Facilities and long-term debt arrangements and other considerations, determine to pay dividends in the future. The declaration, amount and payment of any future dividends on shares of our common stock will be at the sole discretion of our Board, which may take into account general and economic conditions, our financial condition and results of operations, our available cash and current and anticipated cash needs, capital requirements, contractual, legal, tax and regulatory restrictions, the implications of the payment of dividends by us to our stockholders or by our subsidiaries to us, and any other factors that our Board may deem relevant. Our long-term debt arrangements contain usual and customary restrictive covenants that, among other things, place limitations on our ability to declare dividends. For additional information regarding these restrictive covenants, see Part II, Item 7 “Management’s Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources” and Note 10 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

Recent Sales of Unregistered Securities

We did not sell any unregistered equity securities in 2019.

Purchases of Equity Securities by the Issuer

On October 30, 2013, our Board of Directors (the “Board”) approved an equity repurchase program (the “Repurchase Program”) authorizing the repurchase of up to \$125.0 million of either our common stock or vested in-the-money employee stock options, or a combination thereof. Our Board increased the stock repurchase authorization under the Repurchase Program with respect to the repurchase of our common stock by \$600 million, \$1.5 billion, \$2 billion, \$1.5 billion, and \$2.0 billion in 2015, 2016, 2017, 2018, and 2019, respectively, which increased the total amount that has been authorized under the Repurchase Program to \$7.725 billion. The Repurchase Program does not obligate us to repurchase any particular amount of common stock or vested in-the-money employee stock options, and it may be modified, extended, suspended or discontinued at any time. The timing and amount of repurchases are determined by our management based on a variety of factors such as the market price of our common stock, our corporate requirements, and overall market conditions. Purchases of our common stock may be made in open market transactions effected through a broker-dealer at prevailing market prices, in block trades, or in privately negotiated transactions. The Repurchase Program for common stock does not have an expiration date. In addition, from time to time, we have repurchased and may continue to repurchase common stock through private or other transactions outside of the Repurchase Program.

From inception of the Repurchase Program through December 31, 2019, we have repurchased a total of \$6.0 billion of our securities under the Repurchase Program.

During the year ended December 31, 2019, we repurchased 6,605,804 shares of our common stock for approximately \$944.8 million under the Repurchase Program. These amounts include 1,000,000 shares of our common stock, which we repurchased directly from underwriters in connection with a secondary public offering of shares of our common stock held by certain of our Selling Stockholders for an aggregate purchase price of \$140.8 million and 1,000,000 shares of our common stock repurchased from certain Selling Stockholders in a private transaction for an aggregate purchase price of approximately \$156.9 million. For additional information regarding our equity repurchases, see Part II, Item 7 “Management’s Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources” and Note 13 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

As of December 31, 2019, we had remaining authorization to repurchase up to \$1.3 billion of our common stock under the Repurchase Program.

Since the Merger between Quintiles and IMS health, we have repurchased 62.9 million shares of our common stock at an average market price per share of \$94.77 for an aggregate purchase price of \$6.0 billion both under and outside of the Repurchase Program. This includes shares withheld from employees to satisfy certain tax obligations due in connection with grants of stock under the Quintiles IMS Holdings, Inc. 2017 Incentive and Stock Award Plan (the “Plan”). The Plan provides for the withholding of shares to satisfy tax obligations. It does not specify a maximum number of shares that can be withheld for this purpose. The shares of common stock withheld to satisfy tax withholding obligations may be deemed to be “issuer purchases” of shares that are required to be disclosed pursuant to this Item.

The following table summarizes the monthly equity repurchase activity for the three months ended December 31, 2019 and the approximate dollar value of shares that may yet be purchased pursuant to the Repurchase Program.

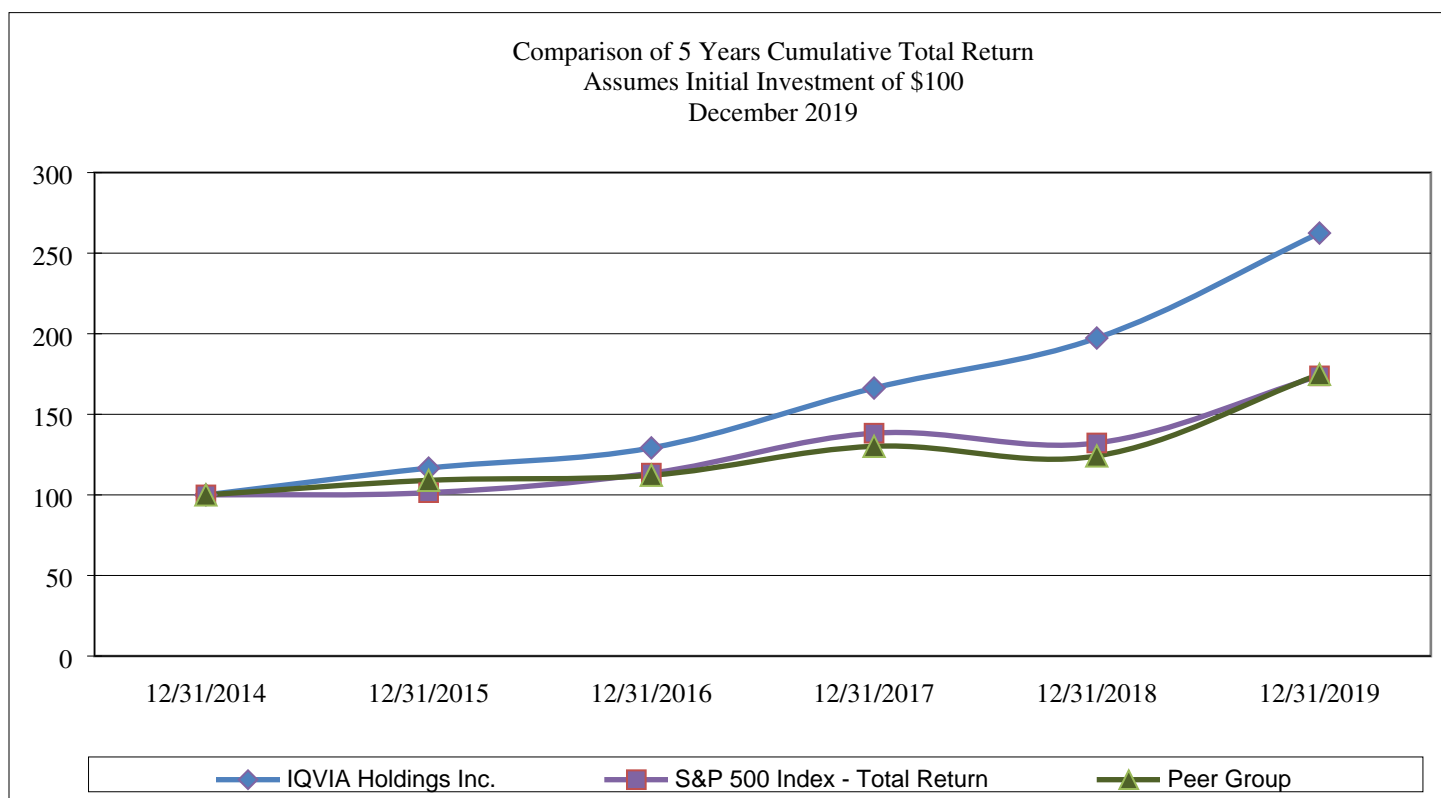
Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares That May Yet Be Purchased Under the Plans or Programs
	(in millions, except per share data)			
October 1, 2019 – October 31, 2019	—	\$ -	—	\$ 1,595
November 1, 2019 – November 30, 2019	1.8	\$ 139.85	1.8	\$ 1,341
December 1, 2019 – December 31, 2019	—	\$ -	—	\$ 1,341
	1.8		1.8	

Stock Performance Graph

This performance graph shall not be deemed “filed” for purposes of Section 18 of the Exchange Act or incorporated by reference into any filing of IQVIA Holdings Inc. under the Exchange Act or under the Securities Act, except as shall be expressly set forth by specific reference in such filing.

The following graph shows a comparison from December 31, 2014 through December 31, 2019 of the cumulative total return for our common stock, the Standard & Poor’s 500 Stock Index (“S&P 500”) and a select peer group. The peer group consists of Cerner Corporation, Charles River Laboratories, Inc., Equifax Inc., ICON plc, IHS Markit Ltd., Laboratory Corporation of America Holdings, Nielsen N.V., PRA Health Sciences, Inc., Syneos Health (formerly INC Research Holdings), Thomson Reuters Corporation and Verisk Analytics, Inc. The companies in our peer group are publicly traded information services, information technology or contract research companies, and thus share similar business model characteristics to IQVIA, or provide services to similar customers as IQVIA. Many of these companies are also used by our compensation committee for purposes of compensation benchmarking.

The graph assumes that \$100 was invested in IQVIA, the S&P 500 and the peer group as of the close of market on December 31, 2014, assumes the reinvestments of dividends, if any. The S&P 500 and our peer group are included for comparative purposes only. They do not necessarily reflect management’s opinion that the S&P 500 and our peer group are an appropriate measure of the relative performance of the stock involved, and they are not intended to forecast or be indicative of possible future performance of our common stock.



	12/31/2014		12/31/2015		12/31/2016		12/31/2017		12/31/2018		12/31/2019	
IQVIA	\$	100	\$	117	\$	129	\$	166	\$	197	\$	262
Peer Group	\$	100	\$	109	\$	112	\$	130	\$	124	\$	174
S&P 500	\$	100	\$	101	\$	114	\$	138	\$	132	\$	174

Item 6. Selected Financial Data

We have derived the following consolidated statements of income data for 2019, 2018 and 2017 and consolidated balance sheet data as of December 31, 2019 and 2018 from our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K. We have derived the following consolidated statements of income data for 2016 and 2015 and consolidated balance sheet data as of December 31, 2017, 2016 and 2015 from our audited consolidated financial statements not included in this Annual Report on Form 10-K. You should read the consolidated financial data set forth below in conjunction with our consolidated financial statements and related notes included elsewhere in this Annual Report on Form 10-K and the information under Part II, Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations.” Effective January 1, 2018, we adopted the requirements of Accounting Standards Update (“ASU”) 2014-09, Revenue from Contracts with Customers (Topic 606) (“ASU 2014-09”) and ASU 2017-07, “Compensation—Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost” (“ASU 2017-07”) using the full retrospective method. As a result of the adoption of ASU 2014-09 and ASU 2017-07, the Company retrospectively adjusted related presentations. We have included the results of operations of acquired businesses from the respective date of acquisition. As a result, our period to period results of operations vary depending on the dates and sizes of the acquisitions. Effective January 1, 2019, we adopted the requirements of ASU 2016-02, Leases (Topic 842): Amendments to the FASB Accounting Standards Codification and elected the transition method which allows for disclosures to be updated prospectively and prior periods to be presented in accordance with previous guidance. Accordingly, this selected financial data is not necessarily comparable or indicative of our future results. You should read this selected consolidated financial data in conjunction with our audited consolidated financial statements and related footnotes included elsewhere in this Annual Report on Form 10-K.

(in millions, except per share data)	Year Ended December 31,				
	2019	2018	2017 ⁽⁴⁾	2016 ⁽⁴⁾⁽⁵⁾	2015
Statement of Income Data:					
Revenues	\$ 11,088	\$ 10,412	\$ 9,702	\$ 6,815	\$ 5,737
Costs of revenue, exclusive of depreciation and amortization	7,300	6,746	6,301	4,748	4,116
Selling, general and administrative expenses	1,734	1,716	1,622	1,016	815
Depreciation and amortization	1,202	1,141	1,011	289	128
Impairment charges ⁽¹⁾	—	—	40	28	2
Restructuring costs	75	68	63	71	30
Merger related costs ⁽²⁾	—	—	—	87	—
Income from operations	777	741	665	576	646
Interest expense, net	438	406	339	140	97
Loss on extinguishment of debt	24	2	19	31	8
Other expense (income), net	(37)	5	13	(11)	2
Income before income taxes and equity in earnings (losses) of unconsolidated affiliates	352	328	294	416	539
Income tax expense (benefit) ⁽³⁾	116	59	(992)	325	159
Income before equity in earnings (losses) of unconsolidated affiliates	236	269	1,286	91	380
Equity in earnings (losses) of unconsolidated affiliates	(9)	15	10	(4)	8
Net income	227	284	1,296	87	388
Net income attributable to non-controlling interests	(36)	(25)	(19)	(15)	(1)
Net income attributable to IQVIA Holdings Inc.	\$ 191	\$ 259	\$ 1,277	\$ 72	\$ 387

(in millions, except per share data)	Year Ended December 31,				
	2019	2018	2017 ⁽⁴⁾	2016 ⁽⁴⁾⁽⁵⁾	2015
Earnings per share attributable to common stockholders:					
Basic	\$ 0.98	\$ 1.27	\$ 5.86	\$ 0.48	\$ 3.15
Diluted	\$ 0.96	\$ 1.24	\$ 5.74	\$ 0.47	\$ 3.08
Weighted average common shares outstanding:					
Basic	195.1	203.7	217.8	149.1	123.0
Diluted	199.6	208.2	222.6	152.0	125.6

(in millions)	Year Ended December 31,				
	2019	2018	2017 ⁽⁴⁾	2016 ⁽⁴⁾⁽⁵⁾	2015
Statement of Cash Flow Data:					
Net cash provided by (used in):					
Operating activities	\$ 1,417	\$ 1,254	\$ 970	\$ 860	\$ 476
Investing activities	(1,190)	(810)	(1,190)	1,731	(67)
Financing activities	(276)	(452)	(72)	(2,284)	(249)
Other Financial Data:					
Capital expenditures	\$ (582)	\$ (459)	\$ (369)	\$ (164)	\$ (78)

(in millions)	As of December 31,				
	2019	2018	2017 ⁽⁴⁾	2016 ⁽⁴⁾⁽⁵⁾	2015
Balance Sheet Data:					
Cash and cash equivalents	\$ 837	\$ 891	\$ 959	\$ 1,198	\$ 977
Investments in debt, equity and other securities	127	88	54	53	33
Trade accounts receivable and unbilled services, net	2,582	2,394	2,097	1,816	1,166
Property and equipment, net	458	434	440	406	188
Total assets	23,251	22,549	22,857	21,312	3,926
Total long-term liabilities	13,043	12,061	11,457	9,609	2,668
Total debt ⁽⁶⁾	11,705	11,056	10,269	7,219	2,501
Total stockholders' equity (deficit)	6,263	6,954	8,244	8,781	(336)

- ⁽¹⁾ In 2017, we recognized \$40 million of impairment losses for declines in fair value of goodwill and identifiable intangible assets in Encore, which we sold in the third quarter of 2017. In 2016, we recognized \$28 million of impairment losses for declines in fair value of goodwill (\$23 million) and identifiable intangible assets (\$5 million) in Encore. In 2015, we wrote down \$2 million related to long-lived assets.
- ⁽²⁾ Merger related costs include the direct and incremental costs associated with the Merger.
- ⁽³⁾ Income tax expense in 2019 includes a reversal of \$25 million related to a reversal of an FDII benefit in 2018 due to proposed regulations being issued in 2019. Income tax expense in 2018 includes \$(35) million related to finalization of SAB 118 and the impacts of GILTI and FDII. Income tax expense in 2017 includes \$(966) million related to the enactment of the Tax Act and \$(261) million related to purchase accounting amortization as a result of the Merger. Income tax expense in 2016 includes \$252 million related to a change in our indefinitely reinvested assertion on our cumulative foreign earnings as a result of the Merger.
- ⁽⁴⁾ As a result of the adoption of ASU 2014-09, we retrospectively adjusted 2017 and 2016 related presentations.
- ⁽⁵⁾ Includes the acquisition of IMS Health effective October 3, 2016.
- ⁽⁶⁾ Excludes \$60 million, \$49 million, \$44 million, \$19 million, \$33 million and \$22 million of unamortized discounts and debt issuance costs as of December 31, 2019, 2018, 2017, 2016, and 2015.

Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations

You should read the following discussion and analysis of our financial condition and results of operations together with our consolidated financial statements and the related notes included elsewhere in this Annual Report on Form 10-K. Some of the information contained in this discussion and analysis or set forth elsewhere in this Annual Report, including information with respect to our plans and strategy for our business, includes forward-looking statements that involve risks and uncertainties. You should read the “Risk Factors” section of this Annual Report for a discussion of important factors that could cause actual results to differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

Overview

IQVIA is a leading global provider of advanced analytics, technology solutions and contract research services to the life sciences industry. Formed through the Merger of IMS Health and Quintiles, IQVIA applies human data science – leveraging the analytic rigor and clarity of data science to the ever-expanding scope of human science – to enable companies to reimagine and develop new approaches to clinical development and commercialization, speed innovation, and accelerate improvements in healthcare outcomes. Powered by the IQVIA CORE, we deliver unique and actionable insights at the intersection of large scale analytics, transformative technology and extensive domain expertise, as well as execution capabilities to help biotech, medical device, and pharmaceutical companies, medical researchers, government agencies, payers and other healthcare stakeholders tap into a deeper understanding of diseases, human behaviors and scientific advances, in an effort to advance their path toward cures. With approximately 67,000 employees, we conduct operations in more than 100 countries.

We are managed through three reportable segments, Technology & Analytics Solutions, Research & Development Solutions and Contract Sales & Medical Solutions. Technology & Analytics Solutions provides critical information, technology solutions and real world solutions and services to our life science clients. Research & Development Solutions, which primarily serves biopharmaceutical clients, is engaged in research and development and provides clinical research and clinical trial services. Contract Sales & Medical Solutions provides contract sales to both biopharmaceutical clients and the broader healthcare market.

For a description of our service offerings within our segments, refer to Part I, Item 1, “Business”.

Industry Outlook

For information about the industry outlook and markets that we operate in, refer to Part I, Item I, “Our Market Outlook”.

Business Combinations

We have completed and will continue to consider strategic business combinations to enhance our capabilities and offerings in certain areas, including various individually immaterial acquisitions during the years ended December 31, 2019 and 2018. These transactions were accounted for as business combinations and the acquired results of operations are included in our consolidated financial information since the acquisition date. See Note 14 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K for additional information with respect to these business combinations.

Sources of Revenue

Total revenues are comprised of revenues from the provision of our services. We do not have any material product revenues.

Costs and Expenses

Our costs and expenses are comprised primarily of our costs of revenue, reimbursed expenses and selling, general and administrative expenses. Costs of revenue include compensation and benefits for billable employees and personnel involved in production, trial monitoring, data management and delivery, and the costs of acquiring and processing data for our information offerings; costs of staff directly involved with delivering technology-related services offerings and engagements, related accommodations and the costs of data purchased specifically for technology services engagements; and other expenses directly related to service contracts such as courier fees, laboratory supplies, professional services and travel expenses. As noted above, reimbursed expenses are comprised principally of payments to investigators who oversee clinical trials and travel expenses for our clinical monitors and sales representatives. Selling, general and administrative expenses include costs related to sales, marketing, and administrative functions (including human resources, legal, finance, quality assurance, compliance and general management) for compensation and benefits, travel, professional services, training and expenses for information technology, facilities and depreciation and amortization.

Foreign Currency Translation

In 2019, approximately 40% of our revenues were denominated in currencies other than the United States dollar, which represents approximately 55 currencies. Because a large portion of our revenues and expenses are denominated in foreign currencies and our financial statements are reported in United States dollars, changes in foreign currency exchange rates can significantly affect our results of operations. The revenue and expenses of our foreign operations are generally denominated in local currencies and translated into United States dollars for financial reporting purposes. Accordingly, exchange rate fluctuations will affect the translation of foreign results into United States dollars for purposes of reporting our condensed consolidated results. As a result, we believe that reporting results of operations that exclude the effects of foreign currency rate fluctuations on certain financial results can facilitate analysis of period to period comparisons. This constant currency information assumes the same foreign currency exchange rates that were in effect for the comparable prior-year period were used in translation of the current period results.

Consolidated Results of Operations

For information regarding our results of operations for Technology & Analytics Solutions, Research & Development Solutions and Contract Sales & Medical Solutions, refer to “Segment Results of Operations” later in this section.

For a discussion of our results of operations comparison for 2018 and 2017, refer to our Annual Report on Form 10-K for the fiscal year ended December 31, 2018 filed on February 19, 2019. Our reportable segment results of operations comparison for 2018 and 2017 included below within this Annual Report on Form 10-K reflects the change in segment presentation that occurred during the first quarter of 2019.

Revenues

(dollars in millions)	Year Ended December 31,			Change			
				2019 vs. 2018		2018 vs. 2017	
	2019	2018	2017	\$	%	\$	%
Revenues	\$ 11,088	\$ 10,412	\$ 9,702	\$ 676	6.5%	\$ 710	7.3%

2019 compared to 2018

In 2019, our revenues increased \$676 million, or 6.5%, as compared to 2018. This increase was comprised of constant currency revenue growth of approximately \$835 million, or 8.0%, and a negative impact of approximately \$159 million from the effects of foreign currency fluctuations. The constant currency revenue growth was comprised of a \$444 million increase in Technology & Analytics Solutions, a \$378 million increase in Research & Development Solutions and a \$13 million increase in Contract Sales & Medical Solutions.

Costs of Revenue, exclusive of Depreciation and Amortization

(dollars in millions)	Year Ended December 31,		
	2019	2018	2017
Costs of revenue, exclusive of depreciation and amortization	\$ 7,300	\$ 6,746	\$ 6,301
% of revenues	65.8%	64.8%	64.9%

2019 compared to 2018

When compared to 2018, costs of revenue, exclusive of depreciation and amortization, in 2019 increased \$554 million, or 8.2%. This increase included a constant currency increase of approximately \$690 million, or 10.2%, and a positive impact of approximately \$136 million from the effects of foreign currency fluctuations. The constant currency growth was comprised of a \$369 million increase in Technology & Analytics Solutions, a \$295 million increase in Research & Development Solutions and a \$26 million increase in Contract Sales & Medical Solutions.

As a percent of revenues, costs of revenue remained flat compared to 2018.

Selling, General and Administrative Expenses

(dollars in millions)	Year Ended December 31,		
	2019	2018	2017
Selling, general and administrative expenses	\$ 1,734	\$ 1,716	\$ 1,622
% of revenues	15.6%	16.5%	16.7%

2019 compared to 2018

The \$18 million increase in selling, general and administrative expenses in 2019 as compared to 2018 included a constant currency increase of approximately \$60 million, or 3.5%, and a positive impact of approximately \$42 million from the effects of foreign currency fluctuations. The constant currency growth primarily consisted of a \$34 million increase in Research & Development Solutions and a \$37 million increase in general corporate and unallocated expenses. These increases were partially offset by a \$6 million decrease in Technology & Analytics Solutions and a \$5 million decrease in Contract Sales & Medical Solutions.

Depreciation and Amortization

(dollars in millions)	Year Ended December 31,		
	2019	2018	2017
Depreciation and amortization	\$ 1,202	\$ 1,141	\$ 1,011
% of revenues	10.8%	11.0%	10.4%

The \$61 million increase in depreciation and amortization in 2019 as compared to 2018 was primarily due to higher intangible asset balances as a result of acquisitions occurring in 2018 and 2019, and increased amortization due to higher capitalized software balances.

Impairment Charges

(in millions)	Year Ended December 31,		
	2019	2018	2017
Impairment charges	\$ —	\$ —	\$ 40

During 2017, we recognized \$40 million of impairment losses for declines in fair value of goodwill and identifiable intangible assets in Encore. See Note 8 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K for additional information with respect to impairment charges.

Restructuring Costs

(in millions)	Year Ended December 31,		
	2019	2018	2017
Restructuring costs	\$ 75	\$ 68	\$ 63

During 2019, we recognized \$75 million of restructuring charges, net of reversals for changes in estimates, under our existing restructuring plans as a result of continuing efforts to streamline our global operations. The remaining actions under these plans, as well as actions associated with upcoming 2020 plans, are expected to occur throughout 2020 and are expected to consist of severance, facility closure and other exit-related costs.

During 2018, we recognized \$68 million of restructuring charges, net of reversals for changes in estimates, respectively, under our existing restructuring plans.

Interest Income and Interest Expense

(in millions)	Year Ended December 31,		
	2019	2018	2017
Interest income	\$ (9)	\$ (8)	\$ (7)
Interest expense	\$ 447	\$ 414	\$ 346

Interest income included interest received primarily from bank balances and investments.

Interest expense during 2019 was higher than 2018 due to an increase in the average debt outstanding, primarily as a result of the May 2019 issuance of \$1.1 billion of 5.00% senior notes due 2027 and the June 2018 issuance of \$1.63 billion of additional term B loans.

Loss on Extinguishment of Debt

(in millions)	Year Ended December 31,		
	2019	2018	2017
Loss on extinguishment of debt	\$ 24	\$ 2	\$ 19

During 2019, we incurred \$24 million of fees and expenses related to the redemption of our 4.875% senior notes due 2023 in aggregate principal amount of \$800 million as discussed further in Note 10 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

During 2018, we incurred \$2 million of fees and expenses related to the refinancing of our Senior Secured Credit Facilities as discussed further in Note 10 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

See “—Liquidity and Capital Resources” for more information on these transactions.

Other Expense (Income), Net

(in millions)	Year Ended December 31,		
	2019	2018	2017
Other (income) expense, net	\$ (37)	\$ 5	\$ 13

Other income, net for 2019 primarily consisted of a gain related to the remeasurement of a previously held equity interest of an equity method investment upon acquiring the remaining interest as a result of a business combination.

Other expense, net for 2018 primarily consisted of an increase in fair value of acquisition-related contingent consideration and foreign currency net losses partially offset by positive returns on pension assets.

Income Tax Expense (Benefit)

(dollars in millions)	Year Ended December 31,		
	2019	2018	2017
Income tax expense (benefit)	\$ 116	\$ 59	\$ (992)
Effective income tax rate	33.0%	18.0%	(337.4)%

In 2019 the U.S. Treasury Department issued final regulations on the transition tax and proposed regulations on Foreign Derived Intangible Income (“FDII”) which we analyzed. While the final regulations related to the transition tax did not have a material impact on us, the proposed guidance for FDII had an unfavorable impact. Although the proposed guidance for FDII is not authoritative and subject to change in the regulatory review process, we reversed the tax benefit recorded in 2018 by recording a tax expense of \$25 million for this impact. It is expected that during 2020 the U.S. Treasury Department will issue final regulations on FDII.

On December 22, 2017, the U.S. government enacted the Tax Act. The Tax Act is comprehensive legislation that includes provisions that lower the federal corporate income tax rate from 35% to 21% beginning in 2018 and imposes a one-time transition tax on undistributed foreign earnings. ASC 740 “Income Taxes” generally requires the effects of the tax law change to be recorded in the period of enactment. However, the SEC staff issued Staff Accounting Bulletin No. 118 (“SAB 118”) to address situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the Tax Act. During the fourth quarter of 2017, we recognized the tax impacts related to the transition tax on undistributed foreign earnings and the impact to deferred tax assets and liabilities and included these amounts in our consolidated financial statements on a provisional basis. During the fourth quarter of 2018, we completed our accounting for SAB 118 that resulted in a full year benefit of \$35 million related to the transition tax. Additionally, in 2018 as a result of the new provisions of the Tax Act, we recorded a benefit of \$25 million related to FDII as well as a tax expense of \$35 million related to GILTI. Our effective income tax rate was also favorably impacted by a tax benefit of \$188 million related to purchase accounting amortization of approximately \$813 million as a result of the Merger.

For 2017, we recorded a provisional deferred tax benefit of \$966 million related to the revaluation of deferred taxes at the newly enacted 21% rate and the reversal of the deferred tax liability on undistributed foreign earnings net of the newly enacted transition tax. We no longer consider any of our foreign earnings to be indefinitely reinvested. Our effective income tax rate was also favorably impacted by a tax benefit of \$261 million related to purchase accounting amortization of approximately \$763 million as a result of the Merger.

Equity in Earnings (Losses) of Unconsolidated Affiliates

(in millions)	Year Ended December 31,		
	2019	2018	2017
Equity in (losses) earnings of unconsolidated affiliates	\$ (9)	\$ 15	\$ 10

Equity in earnings (losses) of unconsolidated affiliates decreased in 2019 compared to 2018 primarily as a result of earnings from our investment in NovaQuest Pharma Opportunities Fund III, L.P. that were recognized in 2018 that did not reoccur in 2019. See Note 4 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K for additional information.

Net Income Attributable to Non-controlling Interests

(in millions)	Year Ended December 31,		
	2019	2018	2017
Net income attributable to non-controlling interests	\$ (36)	\$ (25)	\$ (19)

Net income attributable to non-controlling interests primarily included Quest's interest in Q² Solutions.

Segment Results of Operations

Revenues and profit by segment are as follows:

(in millions)	Segment Revenues			Segment Profit		
	2019	2018	2017	2019	2018	2017
Technology & Analytics Solutions	\$ 4,486	\$ 4,137	\$ 3,682	\$ 1,101	\$ 1,041	\$ 998
Research & Development Solutions	5,788	5,465	5,105	1,141	1,055	861
Contract Sales & Medical Solutions	814	810	915	52	61	69
Total	11,088	10,412	9,702	2,294	2,157	1,928
General corporate and unallocated				(240)	(207)	(149)
Depreciation and amortization				(1,202)	(1,141)	(1,011)
Impairment charges				—	—	(40)
Restructuring costs				(75)	(68)	(63)
Consolidated	\$ 11,088	\$ 10,412	\$ 9,702	\$ 777	\$ 741	\$ 665

Certain costs are not allocated to our segments and are reported as general corporate and unallocated expenses. These costs primarily consist of stock-based compensation and expenses to integration activities and acquisitions. We also do not allocate depreciation and amortization or impairment charges to our segments. Prior period segment results have been recast to conform to changes to management reporting in 2019. The recast impacts the allocation of selling, general and administrative expenses for 2018 and 2017.

Technology & Analytics Solutions

(dollars in millions)	Year Ended December 31,			Change			
	2019	2018	2017	2019 vs. 2018		2018 vs. 2017	
Revenues	\$ 4,486	\$ 4,137	\$ 3,682	\$ 349	8.4%	\$ 455	12.4%
Costs of revenue, exclusive of depreciation and amortization	2,663	2,343	1,967	320	13.7	376	19.1
Selling, general and administrative expenses	722	753	717	(31)	(4.1)	36	5.0
Segment profit	<u>\$ 1,101</u>	<u>\$ 1,041</u>	<u>\$ 998</u>	<u>\$ 60</u>	<u>5.8%</u>	<u>\$ 43</u>	<u>4.3%</u>

Revenues

2019 compared to 2018

Technology & Analytics Solutions' revenues were \$4,486 million in 2019, an increase of \$349 million, or 8.4%, over 2018. This increase was comprised of constant currency revenue growth of approximately \$444 million, or 10.7%, and a negative impact of approximately \$95 million from the effects of foreign currency fluctuations. The constant currency growth resulted primarily from revenue growth in the Americas region as well as the Europe and Africa region. The revenue growth in these regions was driven by higher real-world and analytical services as well as incremental revenue from acquisitions.

Costs of Revenue, exclusive of Depreciation and Amortization

2019 compared to 2018

Technology & Analytics Solutions' costs of revenue, exclusive of depreciation and amortization, were \$2,663 million in 2019, an increase of \$320 million over 2018. This increase was comprised of constant currency growth of approximately \$369 million, or 15.7%, and a positive impact of approximately \$49 million from the effects of foreign currency fluctuations. The constant currency increase was primarily due to an increase in compensation and related expenses from higher headcount to support revenue growth and incremental costs from acquisitions.

Selling, General and Administrative Expenses

2019 compared to 2018

Technology & Analytics Solutions' selling, general and administrative expenses decreased \$31 million in 2019 as compared to 2018. This decrease was comprised of a constant currency decrease of approximately \$6 million, or 0.8%, and a positive impact of approximately \$25 million from the effects of foreign currency fluctuations. The constant currency decrease was primarily related to cost savings initiatives.

Research & Development Solutions

(dollars in millions)	Year Ended December 31,			Change			
	2019	2018	2017	2019 vs. 2018		2018 vs. 2017	
Revenues	\$ 5,788	\$ 5,465	\$ 5,105	\$ 323	5.9%	\$ 360	7.1%
Costs of revenue, exclusive of depreciation and amortization	3,936	3,721	3,566	215	5.8	155	4.3
Selling, general and administrative expenses	711	689	678	22	3.2	11	1.6
Segment profit	<u>\$ 1,141</u>	<u>\$ 1,055</u>	<u>\$ 861</u>	<u>\$ 86</u>	<u>8.2%</u>	<u>\$ 194</u>	<u>22.5%</u>

Backlog

Research and Development Solutions contracted backlog increased from \$17.1 billion at December 31, 2018 to \$19.0 billion at December 31, 2019 and we expect approximately \$5.2 billion of this backlog to convert to revenue in the next 12 months. Contracted backlog was \$14.8 billion at December 31, 2017. The December 31, 2017 backlog amount has been updated to reflect the adoption of the new revenue standard.

Backlog represents, at a particular point in time, future revenues from work not yet completed or performed under signed contracts. Once work begins on a project, revenues are recognized over the duration of the project. Backlog denominated in foreign currencies are valued each month using the actual average foreign exchange rates in effect during the month.

We believe that backlog may not be a consistent indicator of future revenues because backlog has been and likely will be affected by a number of factors, including the variable size and duration of projects, many of which are performed over several years, cancellations, and changes to the scope of work during the course of projects. Projects that have been delayed remain in backlog, but the timing of the revenue generated may differ from the timing originally expected. Additionally, projects may be terminated or delayed by the customer or delayed by regulatory authorities. In the event that a client cancels a contract, we typically would be entitled to receive payment for all services performed up to the cancellation date and subsequent client-authorized services related to winding down the canceled project. For more details regarding risks related to our backlog, see Part I, Item IA, “Risk Factors—Risks Related to our Business—The relationship of backlog to revenues varies over time.”

Revenues

2019 compared to 2018

Research & Development Solutions’ revenues were \$5,788 million in 2019, an increase of \$323 million, or 5.9%, over 2018. This increase was comprised of constant currency revenue growth of approximately \$378 million, or 6.9%, and a negative impact of approximately \$55 million from the effects of foreign currency fluctuations.

The constant currency growth primarily included volume-related increases in clinical services, data management and lab testing volumes as well as incremental revenue from acquisitions.

Costs of Revenue, exclusive of Depreciation and Amortization

2019 compared to 2018

Research & Development Solutions’ costs of revenue, exclusive of depreciation and amortization, increased \$215 million, or 5.8%, in 2019 as compared to 2018. This increase included a constant currency increase of approximately \$295 million, or 7.9%, and a positive impact of approximately \$80 million from the effects of foreign currency fluctuations.

The constant currency increase was primarily due to an increase in compensation and related expenses as well as incremental costs from acquisitions. Compensation and related expenses increased as a result of higher headcount to support revenue growth.

Selling, General and Administrative Expenses

2019 compared to 2018

Research & Development Solutions’ selling, general and administrative expenses increased \$22 million, or 3.2%, in 2019 as compared to 2018, which included a constant currency increase of approximately \$34 million, or 4.9%, and a positive impact of approximately \$12 million from the effects of foreign currency fluctuations. The constant currency increase was primarily related to an increase in compensation and related expenses from higher headcount to support growth and incremental costs from acquisitions.

Contract Sales & Medical Solutions

(dollars in millions)	Year Ended December 31,			Change			
	2019	2018	2017	2019 vs. 2018		2018 vs. 2017	
Revenues	\$ 814	\$ 810	\$ 915	\$ 4	0.5%	\$ (105)	(11.5)%
Costs of revenue, exclusive of depreciation and amortization	701	682	768	19	2.8	(86)	(11.2)
Selling, general and administrative expenses	61	67	78	(6)	(9.0)	(11)	(14.1)
Segment profit	<u>\$ 52</u>	<u>\$ 61</u>	<u>\$ 69</u>	<u>\$ (9)</u>	<u>(14.8)%</u>	<u>\$ (8)</u>	<u>(11.6)%</u>

Revenues

2019 compared to 2018

Contract Sales & Medical Solutions' revenues were \$814 million in 2019, an increase of \$4 million, or 0.5%, over 2018. This increase was comprised of a constant currency revenue growth of approximately \$13 million, or 1.6%, and a negative impact of approximately \$9 million from the effects of foreign currency fluctuations. The constant currency growth was largely due to volume increases in the Americas region.

Costs of Revenue, exclusive of Depreciation and Amortization

2019 compared to 2018

Contract Sales & Medical Solutions' costs of revenue, exclusive of depreciation and amortization, increased \$19 million, or 2.8%, in 2019 as compared to 2018. This increase included a constant currency growth of approximately \$26 million, or 3.8%, and a positive impact of approximately \$7 million from the effects of foreign currency fluctuations. The constant currency cost of revenue increase was due an increase in compensation and related expenses from higher headcount to support revenue growth.

Selling, General and Administrative Expenses

2019 compared to 2018

Contract Sales & Medical Solutions' selling, general and administrative expenses decreased \$6 million, or 9.0%, in 2019 as compared to 2018, primarily related to cost saving initiatives.

Liquidity and Capital Resources

Overview

We assess our liquidity in terms of our ability to generate cash to fund our operating, investing and financing activities. Our principal source of liquidity is operating cash flows. In addition to operating cash flows, other significant factors that affect our overall management of liquidity include: capital expenditures, acquisitions, investments, debt service requirements, dividends, equity repurchases, adequacy of our revolving credit and receivables financing facilities, and access to the capital markets.

We manage our worldwide cash requirements by monitoring the funds available among our subsidiaries and determining the extent to which those funds can be accessed on a cost-effective basis. The repatriation of cash balances from certain of our subsidiaries could have adverse tax consequences; however, those balances are generally available without legal restrictions to fund ordinary business operations. We have and expect to transfer cash from those subsidiaries to the United States and to other international subsidiaries when it is cost effective to do so.

We had a cash balance of \$837 million at December 31, 2019 (\$293 million of which was in the United States), a decrease from \$891 million at December 31, 2018.

Based on our current operating plan, we believe that our available cash and cash equivalents, future cash flows from operations and our ability to access funds under our revolving credit and receivables financing facilities will enable us to fund our operating requirements and capital expenditures and meet debt obligations for at least the next 12 months. We regularly evaluate our debt arrangements, as well as market conditions, and from time to time we may explore opportunities to modify our existing debt arrangements or pursue additional financing arrangements that could result in the issuance of new debt securities by us or our affiliates. We may use our existing cash, cash generated from operations or dispositions of assets or businesses and/or proceeds from any new financing arrangements or issuances of debt or equity securities to repay or reduce some of our outstanding obligations, to repurchase shares from our stockholders or for other purposes. As part of our ongoing business strategy, we also continually evaluate new acquisition, expansion and investment possibilities or other strategic growth opportunities, as well as potential dispositions of assets or businesses, as appropriate, including dispositions that may cause us to recognize a loss on certain assets. Should we elect to pursue any such transaction, we may seek to obtain debt or equity financing to facilitate those activities. Our ability to enter into any such potential transactions and our use of cash or proceeds is limited to varying degrees by the terms and restrictions contained in our existing debt arrangements. We cannot provide assurances that we will be able to complete any such financing arrangements or other transactions on favorable terms or at all.

Equity Repurchase Program

On February 13, 2019, the Board increased the stock repurchase authorization under the “Repurchase Program by \$2.0 billion, which increased the total amount that has been authorized under the Repurchase Program to \$7.725 billion since the plan’s inception in October 2013. The Repurchase Program does not obligate the Company to repurchase any particular amount of common stock, and it may be modified, extended, suspended or discontinued at any time.

As of December 31, 2019, the Company has remaining authorization to repurchase up to \$1.3 billion of its common stock under the Repurchase Program. In addition, from time to time, the Company has repurchased and may continue to repurchase common stock through private or other transactions outside of the Repurchase Program.

Additional information regarding the Repurchase Program is presented in Part II, Item 5 “Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities” and Note 13 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

Debt

As of December 31, 2019, we had \$11.7 billion of total indebtedness, excluding \$1.1 billion of available borrowings under our revolving credit facilities. See Note 10 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K for additional details regarding our credit arrangements.

Our long-term debt arrangements contain customary restrictive covenants and, as of December 31, 2019, we believe we were in compliance with our restrictive covenants in all material respects.

Senior Secured Credit Facilities and Senior Notes

At December 31, 2019, our Fourth Amended and Restated Credit Agreement, as amended (the “Credit Agreement”) provided financing through several senior secured credit facilities (collectively, the “Senior Secured Credit Facilities”) of approximately \$6,811 million, which consisted of \$5,677 million principal amount of debt outstanding, \$3 million of issued standby letters of credit, and \$1,131 million of available borrowing capacity on the \$1,500 million revolving credit facility. The revolving credit facility is comprised of a \$675 million senior secured revolving facility available in U.S. dollars, a \$600 million senior secured revolving facility available in U.S. dollars, Euros, Swiss Francs and other foreign currencies, and a \$225 million senior secured revolving facility available in U.S. dollars and Yen. The term A loans and revolving credit facility under the Credit Agreement mature in June 2023, while the term B loans under the Credit Agreement mature in 2024 and 2025. We are required to make scheduled quarterly payments on the term A loans equal to 1.25% of the original principal amount, with the remaining balance paid at maturity. We are required to make scheduled quarterly payments on the term B loans equal to approximately 0.25% of the original principal amount, with the remaining balance paid at maturity. In addition, beginning with fiscal year ending December 31, 2017, we were required to apply 50% of excess cash flow (as defined in the Credit Agreement), subject to a reduction to 25% or 0% depending upon our senior secured first lien net leverage ratio, for prepayment of the term loans, with any such prepayment to be applied toward principal payments due in subsequent quarters. We are also required to pay an annual commitment fee that ranges from 0.20% to 0.35% in respect of any unused commitments under the revolving credit facility. The Senior Secured Credit Facilities are collateralized by substantially all of our assets and the assets of our material domestic subsidiaries including 100% of the equity interests of substantially all of our material domestic subsidiaries and 66% of the equity interests of substantially all of our first-tier material foreign subsidiaries and their domestic subsidiaries.

For information regarding the Senior Secured Credit Facilities and senior notes, see Note 10 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

Receivables Financing Facility

For information regarding receivables financing facility, see Note 10 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K. As of December 31, 2019, no additional amounts of revolving loans were available under the receivables financing facility.

Years ended December 31, 2019, 2018 and 2017

Cash Flow from Operating Activities

(in millions)	Year Ended December 31,		
	2019	2018	2017
Net cash provided by operating activities	\$ 1,417	\$ 1,254	\$ 970

2019 compared to 2018

Cash provided by operating activities increased \$163 million in 2019 as compared to 2018. The increase is primarily due to improved collections on receivables, higher cash-related net income and the timing of income tax and other payables.

Cash Flow from Investing Activities

(in millions)	Year Ended December 31,		
	2019	2018	2017
Net cash used in investing activities	\$ (1,190)	\$ (810)	\$ (1,190)

2019 compared to 2018

Cash used in investing activities increased \$380 million in 2019 as compared to 2018. The increase was primarily due to higher cash used for the acquisition of property, equipment and software (\$123 million) and for the acquisition of businesses (\$279 million).

Cash Flow from Financing Activities

(in millions)	Year Ended December 31,		
	2019	2018	2017
Net cash used in financing activities	\$ (276)	\$ (452)	\$ (72)

2019 compared to 2018

Cash used in financing activities decreased \$176 million in 2019 as compared to 2018. The decrease in cash used in financing activities was primarily related to fewer share repurchases (\$456 million), proceeds from debt issuance (\$269 million), partially offset by repayment of revolving credit facility, net of proceeds (\$370 million) and debt repayment (\$167 million).

Contingencies

We are exposed to certain known contingencies that are material to our investors. The facts and circumstances surrounding these contingencies and a discussion of their effect on us are in Note 12 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K. These contingencies may have a material effect on our liquidity, capital resources or results of operations. In addition, even where our reserves are adequate, the incurrence of any of these liabilities may have a material effect on our liquidity and the amount of cash available to us for other purposes.

We believe that we have made appropriate arrangements in respect of the future effect on us of these known contingencies. We also believe that the amount of cash available to us from our operations, together with cash from financing, will be sufficient for us to pay any known contingencies as they become due without materially affecting our ability to conduct our operations and invest in the growth of our business.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements except for operating leases entered into in the normal course of business.

Contractual Obligations and Commitments

Below is a summary of our future payment commitments by year under contractual obligations as of December 31, 2019:

(in millions)	2020	2021 - 2022	2023 - 2024	Thereafter	Total
Long-term debt, including interest ⁽¹⁾	\$ 484	\$ 1,254	\$ 4,508	\$ 7,529	\$ 13,775
Operating leases	160	234	135	86	615
Data acquisition	355	429	132	7	923
Purchase obligations ⁽²⁾	17	19	14	5	55
Commitments to unconsolidated affiliates ⁽³⁾	—	—	—	—	—
Benefit obligations ⁽⁴⁾	29	28	32	82	171
Uncertain income tax positions ⁽⁵⁾	23	19	4	1	47
Total	\$ 1,068	\$ 1,983	\$ 4,825	\$ 7,710	\$ 15,586

⁽¹⁾ Interest payments on our debt are based on the interest rates in effect on December 31, 2019.

⁽²⁾ Purchase obligations are defined as agreements to purchase goods or services that are enforceable and legally binding and that specify all significant terms, including fixed or minimum quantities to be purchased, fixed, minimum or variable pricing provisions and the approximate timing of the transactions.

⁽³⁾ We are currently committed to invest \$120 million in private equity funds. As of December 31, 2019, we have funded approximately \$77.5 million of these commitments and we have approximately \$42.5 million remaining to be funded which has not been included in the above table as we are unable to predict when these commitments will be paid.

⁽⁴⁾ Amounts represent expected future benefit payments for our pension and postretirement benefit plans, as well as expected contributions for 2020 for our funded pension benefit plans. We made cash contributions totaling approximately \$29 million to our defined benefit plans in 2019, and we estimate that we will make contributions totaling approximately \$29 million to our defined benefit plans in 2020. Due to the potential impact of future plan investment performance, changes in interest rates, changes in other economic and demographic assumptions and changes in legislation in foreign jurisdictions, we are not able to reasonably estimate the timing and amount of contributions that may be required to fund our defined benefit plans for periods beyond 2020.

⁽⁵⁾ As of December 31, 2019, our liability related to uncertain income tax positions was approximately \$134 million, \$87 million of which has not been included in the above table as we are unable to predict when these liabilities will be paid due to the uncertainties in the timing of the settlement of the income tax positions.

Application of Critical Accounting Policies

Note 1 to the audited consolidated financial statements provided elsewhere in this Annual Report on Form 10-K describes the significant accounting policies used in the preparation of the consolidated financial statements. The preparation of our consolidated financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported amounts of revenues and expenses during the period. Our estimates are based on historical experience and various other assumptions we believe are reasonable under the circumstances. We evaluate our estimates on an ongoing basis and make changes to the estimates and related disclosures as experience develops or new information becomes known. Actual results may differ from those estimates.

We believe the following critical accounting policies affect our more significant judgments and estimates used in the preparation of our consolidated financial statements.

Revenue Recognition

The majority of the Company's contracts within the Research & Development Solutions segment are service contracts for clinical research that represent a single performance obligation. The Company provides a significant integration service resulting in a combined output, which is clinical trial data that meets the relevant regulatory standards and can be used by the customer to progress to the next phase of a clinical trial or solicit approval of a treatment by the applicable regulatory body. The performance obligation is satisfied over time as the output is captured in data and documentation that is available for the customer to consume over the course of the arrangement and furthers progress of the clinical trial. The Company recognizes revenue over time using a cost-based input method since there is no single output measure that would fairly depict the transfer of control over the life of the performance obligation. Progress on the performance obligation is measured by the proportion of actual costs incurred to the total costs expected to complete the contract. Costs included in the measure of progress include direct labor and third-party costs (such as payments to investigators and other pass through expenses for the Company's clinical monitors). This cost-based method of revenue recognition requires the Company to make estimates of costs to complete its projects on an ongoing basis. Significant judgment is required to evaluate assumptions related to these estimates. The effect of revisions to estimates related to the transaction price or costs to complete a project are recorded in the period in which the estimate is revised. Most contracts may be terminated upon 30 to 90 days notice by the customer; however, in the event of termination, most contracts require payment for services rendered through the date of termination, as well as for subsequent services rendered to close out the contract.

Income Taxes

Certain items of income and expense are not recognized on our income tax returns and financial statements in the same year, which creates timing differences. The income tax effect of these timing differences results in (1) deferred income tax assets that create a reduction in future income taxes and (2) deferred income tax liabilities that create an increase in future income taxes. Recognition of deferred income tax assets is based on management's belief that it is more likely than not that the income tax benefit associated with certain temporary differences, income tax operating loss and capital loss carryforwards and income tax credits, would be realized. We recorded a valuation allowance to reduce our deferred income tax assets for those deferred income tax items for which it was more likely than not that realization would not occur. We determined the amount of the valuation allowance based, in part, on our assessment of future taxable income and in light of our ongoing income tax strategies. If our estimate of future taxable income or tax strategies changes at any time in the future, we would record an adjustment to our valuation allowance. Recording such an adjustment could have a material effect on our financial condition or results of operations.

Income tax expense is based on the distribution of profit before income tax among the various taxing jurisdictions in which we operate, adjusted as required by the income tax laws of each taxing jurisdiction. Changes in the distribution of profits and losses among taxing jurisdictions may have a significant impact on our effective income tax rate. We do not consider the undistributed earnings of our foreign subsidiaries to be indefinitely reinvested outside of the United States.

Business Combinations

We use the acquisition method to account for business combinations, and accordingly, the identifiable assets acquired, the liabilities assumed and any non-controlling interest in the acquiree are recorded at their estimated fair values on the date of the acquisition. We use significant judgments, estimates and assumptions in determining the estimated fair value of assets acquired, liabilities assumed and non-controlling interest including expected future cash flows, discount rates that reflect the risk associated with the expected future cash flows and estimated useful lives.

We have recorded and allocated to our reporting units the excess of the cost over the fair value of the net assets acquired, known as goodwill. The recoverability of the goodwill and indefinite-lived intangible assets are evaluated annually for impairment, or if and when events or circumstances indicate a possible impairment. We review the carrying values of other identifiable intangible assets if the facts and circumstances indicate a possible impairment. Any future impairment could have a material adverse effect on our financial condition or results of operations.

Stock-based Compensation

We measure compensation cost for stock-based payment awards (stock options and stock appreciation rights) granted to employees and non-employee directors at fair value using the Black-Scholes-Merton option-pricing model and for performance awards using the Monte Carlo simulation model. Stock-based compensation expense includes stock-based awards granted to employees and non-employee directors and has been reported in selling, general and administrative expenses in our consolidated statements of income based upon the classification of the individuals who were granted stock-based awards.

The Black-Scholes-Merton option-pricing model requires the use of subjective assumptions, including share price volatility, the expected life of the award, risk-free interest rate and the fair value of the underlying common shares on the date of grant. In developing our assumptions, we take into account the following:

- We calculate expected volatility based on reported data for selected reasonably similar publicly traded companies for which the historical information is available. We plan to continue to use the guideline peer group volatility information until the historical volatility of our common shares is relevant to measure expected volatility for future award grants;
- We determine the risk-free interest rate by reference to implied yields available from United States Treasury securities with a remaining term equal to the expected life assumed at the date of grant;
- We estimate the dividend yield to be zero as we do not currently anticipate paying any future dividends;
- We estimate the average expected life of the award based on our historical experience; and
- We estimate forfeitures based on our historical analysis of actual forfeitures.

Pensions and Other Postretirement Benefits

We provide retirement benefits to certain employees, including defined benefit pension plans and postretirement medical plans. The determination of benefit obligations and expense is based on actuarial models. In order to measure benefit costs and obligations using these models, critical assumptions are made with regard to the discount rate, expected return on plan assets, cash balance crediting rate, lump sum conversion rate and the assumed rate of compensation increases. In addition, retiree medical care cost trend rates are a key assumption used exclusively in determining costs for our postretirement health care and life insurance benefit plans.

Recently Issued Accounting Standards

Information relating to recently issued accounting standards is included in Note 1 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Market risk is the potential loss arising from adverse changes in market rates and prices. In the ordinary course of business, we are exposed to various market risks and we regularly evaluate our exposure to such changes. Our overall risk management strategy seeks to balance the magnitude of the exposure and the cost and availability of appropriate financial instruments. The following analyses present the sensitivity of our financial instruments to hypothetical changes that are reasonably possible over a one-year period.

Foreign Currency Exchange Rates

We transact business in more than 100 countries and approximately 55 currencies and are subject to risks associated with fluctuating foreign currency exchange rates. Our objective is to reduce earnings and cash flow volatility associated with foreign currency exchange rate movements. Accordingly, we enter into foreign currency forward contracts to hedge certain forecasted foreign currency cash flows related to service contracts and to hedge non-United States dollar anticipated intercompany royalties. It is our policy to enter into foreign currency transactions only to the extent necessary to meet our objectives as stated above. We do not enter into foreign currency transactions for investment or speculative purposes. The principal currencies hedged are the Euro, the British Pound, the Japanese Yen, the Swiss Franc and the Canadian dollar.

The contractual value of our foreign exchange derivative instruments, all of which were foreign exchange forward contracts, was approximately \$148 million at December 31, 2019. The fair value of these contracts is subject to change as a result of potential changes in foreign exchange rates. We assess our market risk based on changes in foreign exchange rates utilizing a sensitivity analysis. The sensitivity analysis measures the potential gain or loss in fair values based on a hypothetical 10% change in foreign currency exchange rates. The potential gain in fair value for foreign exchange forward contracts based on a hypothetical 10% decrease in the value of the United States dollar or, in the case of non-United States dollar related contracts, the currency being purchased, was less than \$1 million at December 31, 2019. However, the change in the fair value of the foreign exchange forward contracts would likely be offset by a change in the value of the future service contract revenue or royalty being hedged caused by the currency exchange rate fluctuation. The estimated fair values of the foreign exchange forward contracts were determined based on quoted market prices.

Exchange rate fluctuations affect the United States dollar value of foreign currency revenue and expenses and may have a significant effect on our results. Excluding the impacts from any outstanding or future hedging transactions, a hypothetical 10% change in average exchange rates used to translate all foreign currencies to the United States dollar would have impacted income before income taxes for 2019 by approximately \$165 million. The actual impact of exchange rate movements in the future could differ materially from this hypothetical analysis, based on the mix of foreign currencies and the timing and magnitude of individual exchange rate movements.

Additionally, commencing in 2016, we designated a portion of our foreign currency denominated debt as a hedge of our net investment in foreign subsidiaries to reduce the volatility in stockholders' equity caused by changes in the Euro exchange rate with respect to the United States dollar. As of December 31, 2019, these borrowings (net of original issue discount) were €5,273 million (\$5,915 million). A hypothetical 10% decrease in the value of the United States dollar would lead to a potential loss in fair value of \$592 million. However, this change in fair value would be offset by the change in value of the hedged portion of our net investment in foreign subsidiaries caused by the currency exchange rate fluctuation.

Interest Rates

Because we have variable rate debt, fluctuations in interest rates affect our business. We attempt to minimize interest rate risk and lower our overall borrowing costs through the utilization of derivative financial instruments, primarily interest rate swaps. We have entered into interest rate swaps with financial institutions that have reset dates and critical terms that match the underlying debt. Accordingly, any change in market value associated with the interest rate swaps is offset by the opposite market impact on the related debt. As of December 31, 2019, we had approximately \$5.9 billion of variable rate indebtedness and interest rate swaps with a notional value of \$1.2 billion. Because we do not attempt to hedge all of our variable rate debt, we may incur higher interest costs for the portion of our variable rate debt that is not hedged. Excluding debt covered by hedges, each quarter-point increase or decrease in the interest rate on our variable rate debt would result in our interest expense changing by approximately \$11 million per year.

Marketable Securities

At December 31, 2019, we held investments in marketable equity securities. These investments are classified as either trading securities or available-for-sale securities and are recorded at fair value. These securities are subject to price risk. As of December 31, 2019, the fair value of these investments was \$62 million based on the quoted market value of the securities. The potential loss in fair value resulting from a hypothetical decrease of 10% in quoted market values was approximately \$6 million at December 31, 2019.

Item 8. Financial Statements and Supplementary Data

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

The management of IQVIA Holdings Inc. (the "Company") is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2019. In making this assessment, management used the framework established in Internal Control—Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). As a result of this assessment and based on the criteria in the COSO framework, management has concluded that, as of December 31, 2019, the Company's internal control over financial reporting was effective.

The effectiveness of the Company's internal control over financial reporting as of December 31, 2019 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which appears herein.

/s/ Ari Bousbib

Ari Bousbib

Chairman, Chief Executive Officer and President
(Principal Executive Officer)

/s/ Michael R. McDonnell

Michael R. McDonnell

Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

February 18, 2020

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of IQVIA Holdings Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of IQVIA Holdings Inc. and its subsidiaries (the “Company”) as of December 31, 2019 and 2018, and the related consolidated statements of income, comprehensive (loss) income, stockholders’ equity (deficit) and cash flows for each of the three years in the period ended December 31, 2019, including the related notes and financial statement schedules listed in the index appearing under Item 15(a)(2) (collectively referred to as the “consolidated financial statements”). We also have audited the Company’s internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019.

Basis for Opinions

The Company’s management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management’s Report on Internal Control over Financial Reporting. Our responsibility is to express opinions on the Company’s consolidated financial statements and on the Company’s internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding

prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Revenue Recognition – Estimating Measure of Progress for Clinical Research Services

As described in Notes 1 and 20 to the consolidated financial statements, revenue of the Research & Development Solutions segment for the year ended December 31, 2019, is \$5,788 million, the majority of which relates to service contracts for clinical research that represent a single performance obligation. The Company recognized revenue for these contracts over time using a cost-based input method. Revenue was recognized based on progress on the performance obligation, which was measured by the proportion of actual costs incurred to the total costs expected to complete the contract. Costs included in the measure of progress include direct labor and third-party costs (such as payments to investigators and other pass through expenses for the Company's clinical monitors). This cost-based method of revenue recognition required management to make estimates of costs to complete its projects on an ongoing basis.

The principal considerations for our determination that performing procedures relating to revenue recognition - estimating measure of progress for clinical research services - is a critical audit matter are the high degree of auditor judgment, subjectivity, and effort in performing audit procedures and evaluating audit evidence related to the cost estimates made by management, due to significant judgment by management when determining the total expected costs to complete its contracts, specifically the estimation of direct labor and third-party costs.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the revenue recognition process, including controls over the estimation of the total cost to complete clinical research service contracts. These procedures also included, among others, testing management's process for determining the estimate of total costs to complete its contracts, which included evaluating the reasonableness of significant assumptions made by management including direct labor and third party-costs, evaluating the appropriateness of changes to management's estimate of total costs to complete throughout the duration of the contract, testing actual direct costs incurred, and evaluating management's ability to reasonably estimate the total expected costs to complete contracts, which included performing a comparison of management's prior period cost estimates to final actual costs.

/s/ PricewaterhouseCoopers LLP
Raleigh, North Carolina
February 18, 2020

We have served as the Company's auditor since 2002.

IQVIA HOLDINGS INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF INCOME

(in millions, except per share data)	Year Ended December 31,		
	2019	2018	2017
Revenues	\$ 11,088	\$ 10,412	\$ 9,702
Costs of revenue, exclusive of depreciation and amortization	7,300	6,746	6,301
Selling, general and administrative expenses	1,734	1,716	1,622
Depreciation and amortization	1,202	1,141	1,011
Impairment charges	—	—	40
Restructuring costs	75	68	63
Income from operations	777	741	665
Interest income	(9)	(8)	(7)
Interest expense	447	414	346
Loss on extinguishment of debt	24	2	19
Other (income) expense, net	(37)	5	13
Income before income taxes and equity in earnings of unconsolidated affiliates	352	328	294
Income tax expense (benefit)	116	59	(992)
Income before equity in earnings (losses) of unconsolidated affiliates	236	269	1,286
Equity in (losses) earnings of unconsolidated affiliates	(9)	15	10
Net income	227	284	1,296
Net income attributable to non-controlling interests	(36)	(25)	(19)
Net income attributable to IQVIA Holdings Inc.	\$ 191	\$ 259	\$ 1,277
Earnings per share attributable to common stockholders:			
Basic	\$ 0.98	\$ 1.27	\$ 5.86
Diluted	\$ 0.96	\$ 1.24	\$ 5.74
Weighted average common shares outstanding:			
Basic	195.1	203.7	217.8
Diluted	199.6	208.2	222.6

The accompanying notes are an integral part of these consolidated financial statements.

IQVIA HOLDINGS INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE (LOSS) INCOME

(in millions)	Year Ended December 31,		
	2019	2018	2017
Net income	\$ 227	\$ 284	\$ 1,296
Comprehensive (loss) income adjustments:			
Unrealized (losses) gains on derivative instruments, net of income tax expense (benefit) of \$4, (\$5) and \$1	(15)	1	4
Defined benefit plan adjustments, net of income tax (benefit) expense of \$5, (\$4) and \$3	(30)	(8)	5
Foreign currency translation, net of income tax (benefit) expense of (\$30), \$50 and (\$201)	(39)	(258)	611
Reclassification adjustments:			
(Gains) losses on derivative instruments included in net income, net of income tax expense of \$—, \$1 and \$—	(1)	(12)	(1)
Amortization of actuarial losses and prior service costs included in net income	—	1	1
Comprehensive income (loss)	142	8	1,916
Comprehensive (income) loss attributable to non-controlling interests	(38)	(22)	(26)
Comprehensive income (loss) attributable to IQVIA Holdings Inc.	\$ 104	\$ (14)	\$ 1,890

The accompanying notes are an integral part of these consolidated financial statements.

IQVIA HOLDINGS INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS

(in millions, except per share data)	December 31,	
	2019	2018
ASSETS		
Cash and cash equivalents	\$ 837	\$ 891
Trade accounts receivable and unbilled services, net	2,582	2,394
Prepaid expenses	138	151
Income taxes receivable	56	69
Investments in debt, equity and other securities	62	47
Other current assets and receivables	451	322
Total current assets	4,126	3,874
Property and equipment, net	458	434
Operating lease right-of-use assets	496	—
Investments in debt, equity and other securities	65	41
Investments in unconsolidated affiliates	87	101
Goodwill	12,159	11,800
Other identifiable intangibles, net	5,514	5,951
Deferred income taxes	119	109
Deposits and other assets	227	239
Total assets	\$ 23,251	\$ 22,549
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable and accrued expenses	\$ 2,512	\$ 2,295
Unearned income	1,014	1,007
Income taxes payable	108	100
Current portion of long-term debt	100	100
Other current liabilities	211	32
Total current liabilities	3,945	3,534
Long-term debt, less current portion	11,545	10,907
Deferred income taxes	646	736
Operating lease liabilities	396	—
Other liabilities	456	418
Total liabilities	16,988	15,595
Commitments and contingencies (Note 1)		
Stockholders' equity:		
Common stock and additional paid-in capital, 400.0 shares authorized at December 31, 2019 and 2018, \$0.01 par value, 253.0 shares issued and 192.3 shares outstanding at December 31, 2019; 251.5 shares issued and 197.5 shares outstanding at December 31, 2018	11,049	10,901
Retained earnings	998	807
Treasury stock, at cost, 60.7 and 54.0 shares at December 31, 2019 and 2018, respectively	(5,733)	(4,770)
Accumulated other comprehensive loss	(311)	(224)
Equity attributable to IQVIA Holdings Inc.'s stockholders	6,003	6,714
Non-controlling interests	260	240
Total stockholders' equity	6,263	6,954
Total liabilities and stockholders' equity	\$ 23,251	\$ 22,549

The accompanying notes are an integral part of these consolidated financial statements.

IQVIA HOLDINGS INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS

(in millions)	Year Ended December 31,		
	2019	2018	2017
Operating activities:			
Net income	\$ 227	\$ 284	\$ 1,296
Adjustments to reconcile net income to cash provided by operating activities:			
Depreciation and amortization	1,202	1,141	1,011
Amortization of debt issuance costs and discount	13	11	9
Amortization of accumulated other comprehensive loss on terminated interest rate swaps	—	—	3
Stock-based compensation	146	113	106
Impairment of goodwill and identifiable intangible assets	—	—	40
Loss (gain) on disposals of property and equipment, net	1	—	(1)
Loss (earnings) from unconsolidated affiliates	9	(15)	(10)
(Gain) loss on investments, net	(43)	3	(8)
Benefit from deferred income taxes	(157)	(177)	(1,221)
Changes in operating assets and liabilities:			
Accounts receivable and unbilled services	(122)	(297)	(141)
Prepaid expenses and other assets	(92)	(66)	(54)
Accounts payable and accrued expenses	240	368	90
Unearned income	(2)	7	(68)
Income taxes payable and other liabilities	(5)	(118)	(82)
Net cash provided by operating activities	<u>1,417</u>	<u>1,254</u>	<u>970</u>
Investing activities:			
Acquisition of property, equipment and software	(582)	(459)	(369)
Net cash paid for acquisition of businesses	(588)	(309)	(854)
Disposition of business, net of cash disposed	—	—	12
(Purchases) sales of marketable securities, net	(3)	(4)	2
Investments in unconsolidated affiliates, net of payments received	—	(17)	15
(Investments in) proceeds from sale of equity securities	(22)	(23)	—
Other	5	2	4
Net cash used in investing activities	<u>(1,190)</u>	<u>(810)</u>	<u>(1,190)</u>
Financing activities:			
Proceeds from issuance of debt	1,900	1,631	5,242
Payment of debt issuance costs	(47)	(22)	(50)
Repayment of debt	(899)	(732)	(2,883)
Proceeds from revolving credit facility	2,522	2,445	1,921
Repayment of revolving credit facility	(2,776)	(2,329)	(1,767)
Principal payments on capital lease obligations	—	—	(2)
Proceeds related to employee stock option plans	11	15	91
Repurchase of common stock	(949)	(1,405)	(2,620)
Distributions to non-controlling interest, net	(18)	(31)	—
Contingent consideration and deferred purchase price payments	(20)	(24)	(4)
Net cash used in financing activities	<u>(276)</u>	<u>(452)</u>	<u>(72)</u>
Effect of foreign currency exchange rate changes on cash	(5)	(60)	53
Decrease in cash and cash equivalents	(54)	(68)	(239)
Cash and cash equivalents at beginning of period	891	959	1,198
Cash and cash equivalents at end of period	<u>\$ 837</u>	<u>\$ 891</u>	<u>\$ 959</u>

The accompanying notes are an integral part of these consolidated financial statements.

IQVIA HOLDINGS INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (DEFICIT)

(in millions)	Common Stock Shares	Treasury Stock Shares	Common Stock	Additional Paid-In Capital	Retained Earnings (Accumulated Deficit)	Treasury Stock	Accumulated Other Comprehensive (Loss) Income	Non- controlling Interests	Total
Balance, December 31, 2016	248.3	(12.9)	2	10,600	(484)	(1,000)	(564)	227	8,781
Issuance of common stock	3.7	—	—	—	—	—	—	—	—
Repurchase of common stock	—	(28.5)	—	—	—	(2,374)	—	—	(2,374)
Repurchase and retirement of common stock	(2.5)	—	—	—	(255)	—	—	—	(255)
Stock-based compensation	—	—	—	180	—	—	—	—	180
Distribution to non-controlling interest	—	—	—	—	—	—	—	(4)	(4)
Net income	—	—	—	—	1,277	—	—	19	1,296
Unrealized gain on derivative instruments, net of tax	—	—	—	—	—	—	4	—	4
Defined benefit plan adjustments, net of tax	—	—	—	—	—	—	5	—	5
Foreign currency translation, net of tax	—	—	—	—	—	—	604	7	611
Balance, December 31, 2017	249.5	(41.4)	2	10,780	538	(3,374)	49	249	8,244
Issuance of common stock	2.0	—	1	10	—	—	—	—	11
Repurchase of common stock	—	(12.6)	—	—	—	(1,396)	—	—	(1,396)
Stock-based compensation	—	—	—	108	—	—	—	—	108
Distributions to non-controlling interest	—	—	—	—	—	—	—	(31)	(31)
Net income	—	—	—	—	259	—	—	25	284
Unrealized gain on derivative instruments, net of tax	—	—	—	—	—	—	1	—	1
Defined benefit plan adjustments, net of tax	—	—	—	—	—	—	(8)	—	(8)
Foreign currency translation, net of tax	—	—	—	—	—	—	(255)	(3)	(258)
Reclassification adjustments, net of tax	—	—	—	—	—	—	(11)	—	(11)
Other	—	—	—	—	10	—	—	—	10
Balance, December 31, 2018	251.5	(54.0)	\$ 3	\$ 10,898	\$ 807	\$ (4,770)	\$ (224)	\$ 240	\$ 6,954
Issuance of common stock	1.5	—	—	11	—	—	—	—	11
Repurchase of common stock	—	(6.7)	—	—	—	(963)	—	—	(963)
Stock-based compensation	—	—	—	137	—	—	—	—	137
Distributions to non-controlling interest	—	—	—	—	—	—	—	(18)	(18)
Net income	—	—	—	—	191	—	—	36	227
Unrealized losses on derivative instruments, net of tax	—	—	—	—	—	—	(15)	—	(15)
Defined benefit plan adjustments, net of tax	—	—	—	—	—	—	(30)	—	(30)
Foreign currency translation, net of tax	—	—	—	—	—	—	(41)	2	(39)
Reclassification adjustments, net of tax	—	—	—	—	—	—	(1)	—	(1)
Balance, December 31, 2019	253.0	(60.7)	\$ 3	\$ 11,046	\$ 998	\$ (5,733)	\$ (311)	\$ 260	\$ 6,263

The accompanying notes are an integral part of these consolidated financial statements.

IQVIA HOLDINGS INC. AND SUBSIDIARIES
Notes to Consolidated Financial Statements

1. Summary of Significant Accounting Policies

The Company

IQVIA Holdings Inc. (together with its subsidiaries, the “Company” or “IQVIA”) is a leading global provider of advanced analytics, technology solutions and contract research services to the life sciences industry. IQVIA applies human data science – leveraging the analytic rigor and clarity of data science to the ever-expanding scope of human science – to enable companies to reimagine and develop new approaches to clinical development and commercialization, speed innovation, and accelerate improvements in healthcare outcomes. Powered by the IQVIA CORE, the Company delivers unique and actionable insights at the intersection of large-scale analytics, transformative technology and extensive domain expertise, as well as execution capabilities to help biotech, medical device, and pharmaceutical companies, medical researchers, government agencies, payers and other healthcare stakeholders tap into a deeper understanding of diseases, human behaviors and scientific advances, in an effort to advance their path toward cures. With approximately 67,000 employees, the Company conducts business in more than 100 countries.

Principles of Consolidation

The accompanying consolidated financial statements include the accounts and operations of the Company, its subsidiaries and investments in which the Company has control. Amounts pertaining to the non-controlling ownership interests held by third parties in the operating results and financial position of the Company’s majority-owned subsidiaries are reported as non-controlling interests. Intercompany accounts and transactions have been eliminated in consolidation.

Use of Estimates

The preparation of financial statements in accordance with generally accepted accounting principles in the United States of America (“GAAP”) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, and the disclosure of contingent assets and liabilities, at the date of the financial statements, as well as the reported amounts of revenues and expenses during the period. These estimates are based on historical experience and various other assumptions believed reasonable under the circumstances. The Company evaluates its estimates on an ongoing basis and makes changes to the estimates and related disclosures as experience develops or new information becomes known. Actual results may differ from those estimates.

Foreign Currencies

The Company’s financial statements are reported in United States dollars and, accordingly, the Company’s results of operations are impacted by fluctuations in exchange rates that affect the translation of its revenues and expenses denominated in foreign currencies into United States dollars for purposes of reporting its consolidated financial results. Assets and liabilities recorded in foreign currencies on the books of foreign subsidiaries are translated at the exchange rate on the balance sheet date. Revenues, costs and expenses are translated at average rates of exchange during the year. Translation adjustments resulting from this process are charged or credited to the accumulated other comprehensive (loss) income (“AOCI”) component of stockholders’ equity. The Company is subject to foreign currency transaction risk for fluctuations in exchange rates during the period of time between the consummation and cash settlement of a transaction. The Company earns revenue from its service contracts over a period of several months and, in some cases, over a period of several years. Accordingly, exchange rate fluctuations during this period may affect the Company’s profitability with respect to such contracts.

For operations outside the United States that are considered to be highly inflationary or where the United States dollar is designated as the functional currency, monetary assets and liabilities are remeasured using end-of-period exchange rates, whereas nonmonetary accounts are remeasured using historical exchange rates, and all remeasurement and transaction adjustments are recognized in other expense (income), net.

Cash Equivalents

The Company considers all highly liquid investments with an initial maturity of three months or less when purchased to be cash equivalents.

Derivatives

The Company uses derivative instruments to manage exposures to interest rates and foreign currencies. Derivatives are recorded on the balance sheet at fair value at each balance sheet date utilizing pricing models for non-exchange-traded contracts.

At inception, the Company designates whether or not the derivative instrument is an effective hedge of an asset, liability or firm commitment which is then classified as either a cash flow hedge or a fair value hedge. If determined to be an effective cash flow hedge, changes in the fair value of the derivative instrument are recorded as a component of Accumulated Other Comprehensive Income (“AOCI”) until realized. The Company includes the impact from these hedges in the same line item as the hedged item on the consolidated statements of cash flows. Changes in fair value of effective fair value hedges are recorded in earnings as an offset to the changes in the fair value of the related hedged item. Hedge ineffectiveness, if any, is immediately recognized in earnings. Changes in the fair values of derivative instruments that are not an effective hedge are recognized in earnings. When it is probable that a hedged forecasted transaction will not occur, the Company discontinues hedge accounting for the affected portion of the forecasted transaction and reclassifies gains or losses that were accumulated in AOCI to earnings in other expense (income), net for foreign exchange derivatives and interest expense for interest rate derivatives on the consolidated statements of income. Cash flows are classified consistent with the underlying hedged item. The Company has entered, and may in the future enter, into derivative contracts (caps, swaps, forwards, calls or puts, warrants, for example) related to its debt and forecasted foreign currency transactions.

Business Combinations

The Company uses the acquisition method to account for business combinations, and accordingly, the identifiable assets acquired, the liabilities assumed and any non-controlling interest in the acquiree are recorded at their estimated fair values on the date of the acquisition. The Company uses significant judgments, estimates and assumptions in determining the estimated fair value of assets acquired, liabilities assumed and non-controlling interest including expected future cash flows, discount rates that reflect the risk associated with the expected future cash flows and estimated useful lives.

The Company records and allocates to its reporting units the excess of the cost over the fair value of the net assets acquired, known as goodwill. The recoverability of the goodwill and indefinite-lived intangible assets are evaluated annually for impairment, or if and when events or circumstances indicate a possible impairment. The Company reviews the carrying values of other identifiable intangible assets if the facts and circumstances indicate a possible impairment.

Long-Lived Assets

Property and equipment are stated at cost and are depreciated using the straight-line method over the shorter of the asset’s estimated useful life or the lease term, if related to leased property, as follows:

Buildings and leasehold improvements	3 - 40 years
Equipment	3 - 10 years
Furniture and fixtures	5 - 10 years
Transportation equipment	3 - 20 years

Definite-lived identifiable intangible assets are amortized primarily using an accelerated method that reflects the pattern in which the Company expects to benefit from the use of the asset over its estimated remaining useful life as follows:

Trademarks and trade names	1 - 17 years
Contract backlog and client relationships	1 - 25 years
Software and related assets	1 - 10 years
Databases	1 - 9 years
Non-compete agreements and other	2 - 5 years

Included in software and related assets is the capitalized cost of internal-use software used in supporting the Company’s business. Qualifying costs incurred during the application development stage are capitalized and amortized over their estimated useful lives. Costs are capitalized from completion of the preliminary project stage and when it is considered probable that the software will be used to perform its intended function, up until the time the software is placed into service. The Company recognized \$196 million, \$179 million and \$134 million of amortization expense in 2019, 2018 and 2017, respectively, related to software and related assets.

The carrying values of property, equipment and intangible and other long-lived assets are reviewed for recoverability if the facts and circumstances suggest that a potential impairment may have occurred. If this review indicates that carrying values will not be recoverable, as determined based on undiscounted cash flow projections, the Company will record an impairment charge to reduce carrying values to estimated fair value. There were no impairments recognized in 2019 and 2018.

Revenue Recognition

The Company's arrangements are primarily service contracts that range in duration from a few months to several years. The Company recognizes revenue when control of these services is transferred to the customer for an amount, referred to as the transaction price, that reflects the consideration to which the Company is expected to be entitled in exchange for those goods or services. The Company determines revenue recognition utilizing the following five steps: (1) identification of the contract with a customer, (2) identification of the performance obligations in the contract (promised goods or services that are distinct), (3) determination of the transaction price, (4) allocation of the transaction price to the performance obligations, and (5) recognition of revenue when, or as, the Company transfers control of the product or service for each performance obligation. Cash payments made to customers as incentives to induce customers to enter into service agreements with the Company are amortized as a reduction of revenue over the period the services are performed. The Company records revenues net of any tax assessments by governmental authorities, such as value added taxes, that are imposed on and concurrent with specific revenue generating transactions.

The Company derives the majority of its revenues in the Technology & Analytics Solutions segment from various information and technology service offerings. Information offerings (primarily under fixed-price contracts) typically include multiple performance obligations including an ongoing subscription-based deliverable for which revenue is recognized ratably as earned over the contract period, and/or a one-time deliverable of data offerings for which revenue is recognized upon delivery. The customer is able to benefit from the provision of data as it is received. The Company's subscription arrangements typically have terms ranging from one to three years and are generally non-cancelable and do not contain refund-type provisions. Technology services offerings may contain multiple performance obligations consisting of a mix of small and large-scale services and consulting projects, multi-year outsourcing contracts and Software-as-a-Service ("SaaS") arrangements. These arrangements typically have terms ranging from several weeks to three years, with a majority having terms of one year or less. For arrangements that include multiple performance obligations, the transaction price is allocated to the identified performance obligations based on their relative standalone selling prices. For these contracts, the standalone selling prices are based on the Company's normal pricing practices when sold separately with consideration of market conditions and other factors, including customer demographics and geographic location. Revenues for services engagements where the transfer of control occurs ratably over time are recognized on a straight-line basis over the term of the arrangement. Revenues from time and material contracts are recognized based on hours as the services are provided. Revenues from fixed price ad hoc services and consulting contracts are recognized over the contract term based on the ratio of the number of hours incurred for services provided during the period compared to the total estimated hours to be incurred over the entire arrangement (hours-based). Technology services offerings meet the over time criterion, as another party would not need to substantially re-perform the work already completed to satisfy the remaining obligations if the services were migrated.

The majority of the Company's contracts within the Research & Development Solutions segment are service contracts for clinical research that represent a single performance obligation. The Company provides a significant integration service resulting in a combined output, which is clinical trial data that meets the relevant regulatory standards and can be used by the customer to progress to the next phase of a clinical trial or solicit approval of a treatment by the applicable regulatory body. The performance obligation is satisfied over time as the output is captured in data and documentation that is available for the customer to consume over the course of the arrangement and furthers progress of the clinical trial. The Company recognizes revenue over time using a cost-based input method since there is no single output measure that would fairly depict the transfer of control over the life of the performance obligation. Progress on the performance obligation is measured by the proportion of actual costs incurred to the total costs expected to complete the contract. Costs included in the measure of progress include direct labor and third-party costs (such as payments to investigators and other pass through expenses for the Company's clinical monitors). This cost-based method of revenue recognition requires the Company to make estimates of costs to complete its projects on an ongoing basis. Significant judgment is required to evaluate assumptions related to these estimates. The effect of revisions to estimates related to the transaction price or costs to complete a project are recorded in the period in which the estimate is revised. Most contracts may be terminated upon 30 to 90 days notice by the customer; however, in the event of termination, most contracts require payment for services rendered through the date of termination, as well as for subsequent services rendered to close out the contract.

The majority of revenue in our Contract Sales & Medical Solutions segment is from contract sales to the biopharmaceutical industry and broader healthcare market and recognized over time using a single measure of progress dependent on the performance obligation. Some of our Contract Sales & Medical Solutions contracts contain multiple performance obligations with distinct promises including recruiting, sales force automation and deployment of sales representatives. The Company utilizes a single measure of progress for each performance obligation to recognize revenue, which includes deployment of sales representatives based on employee days worked; recruiting based on candidates recruited; sales force automation set-up based on hours worked; and sales force automation hosting and maintenance based on usage. These services meet the over time criterion as the customer consumes the benefit as activities are performed and another party would not need to substantially re-perform the work already completed to satisfy the remaining obligations if the services were migrated to another party.

Variable Consideration

In some cases, contracts provide for variable consideration that is contingent upon the occurrence of uncertain future events, such as performance incentives (including royalty payments or penalty clauses that can either increase or decrease the transaction price). Variable consideration is estimated at the expected value or at the most likely amount depending on the type of consideration. Estimated amounts are included in the transaction price to the extent it is probable that a significant reversal of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is resolved. The estimate of variable consideration and determination of whether to include estimated amounts in the transaction price are based largely on an assessment of its anticipated performance and all information (historical, current and forecasted) that is reasonably available to the Company and reevaluated each reporting period.

Reimbursed Expenses

The Company includes reimbursed expenses in revenues and costs of revenue as the Company is primarily responsible for fulfilling the promise to provide the specified service, including the integration of the related services into a combined output to the customer, which are inseparable from the integrated service. These costs include such items as payments to investigators and travel expenses for the Company's clinical monitors and sales representatives, over which the Company has discretion in establishing prices. The Company controls the good or service and has inventory risk on contractually reimbursable expenses, as sometimes the Company is unable to obtain reimbursement from the customer for costs incurred.

Change Orders

Changes in the scope of work are common, especially under long-term contracts, and generally result in a change in transaction price. Change orders are evaluated on a contract-by-contract basis to determine if they should be accounted for as a new contract or as part of the existing contract. Generally, services from change orders are not distinct from the original performance obligation. As a result, the effect that the contract modification has on the contract revenue, and measure of progress, is recognized as an adjustment to revenue when it occurs.

Costs of Revenue

Costs of revenue include (i) compensation and benefits for billable employees and personnel involved in production, data management and delivery, and the costs of acquiring and processing data for the Company's information offerings; (ii) costs of staff directly involved with delivering technology-related services offerings and engagements, and the costs of data purchased specifically for technology services engagements; (iii) reimbursed expenses that are comprised principally of payments to investigators who oversee clinical trials and travel expenses for the Company's clinical monitors and sales representatives; and (iv) other expenses directly related to service contracts such as courier fees, laboratory supplies, professional services and travel expenses.

Trade Receivables, Unbilled Services and Unearned Income

In general, billings and payments are established by contractual provisions including predetermined payment schedules, which may or may not correspond to the timing of the transfer of control of the Company's services under the contract. In general, the Company's intention in its invoicing (payment terms) is to maintain cash neutrality over the life of the contract. Generally, the payment terms are 30 to 90 days based on contracts. Upfront payments, when they occur, are intended to cover certain expenses the Company incurs at the beginning of the contract. Neither the Company nor its customers view such upfront payments and contracted payment schedules as a means of financing. Unbilled services primarily arise from long-term contracts when a cost-based or hours-based input method of revenue recognition is utilized and revenue recognized exceeds the amount billed to the customer.

Unearned income consists of advance payments and billings in excess of revenue recognized. As the contracted services are subsequently performed and the associated revenue is recognized, the unearned income balance is reduced by the amount of the revenue recognized during the period. Unearned income is classified as a current liability on the condensed consolidated balance sheet as the Company expects to recognize the associated revenue in less than one year.

Restructuring Costs

Restructuring costs, which primarily include termination benefits and facility closure costs, are recorded at estimated fair value. Key assumptions in determining the restructuring costs include the terms and payments that may be negotiated to terminate certain contractual obligations and the timing of employees leaving the Company.

Debt Fees

Fees incurred to issue debt are generally deferred and amortized as a component of interest expense over the estimated term of the related debt using the effective interest rate method.

Contingencies

The Company records accruals for claims, suits, investigations and proceedings when it is probable that a liability has been incurred and the amount of the loss can be reasonably estimated. The Company reviews claims, suits, investigations and proceedings at least quarterly and records or adjusts accruals related to such matters to reflect the impact and status of any settlements, rulings, advice of counsel or other information pertinent to a particular matter. Legal costs associated with contingencies are charged to expense as incurred.

The Company is party to legal proceedings incidental to its business. While the outcome of these matters could differ from management's expectations, the Company does not believe the resolution of these matters will have a material adverse effect to the Company's financial statements.

Income Taxes

Certain items of income and expense are not recognized on the Company's income tax returns and financial statements in the same year, which creates timing differences. The income tax effect of these timing differences results in (1) deferred income tax assets that create a reduction in future income taxes and (2) deferred income tax liabilities that create an increase in future income taxes. Recognition of deferred income tax assets is based on management's belief that it is more likely than not that the income tax benefit associated with certain temporary differences, income tax operating loss and capital loss carryforwards and income tax credits, would be realized. The Company recorded a valuation allowance to reduce its deferred income tax assets for those deferred income tax items for which it was more likely than not that realization would not occur. The Company determined the amount of the valuation allowance based, in part, on the Company's assessment of future taxable income and in light of the Company's ongoing income tax strategies. If the estimate of future taxable income or tax strategies changes at any time in the future, the Company would record an adjustment to our valuation allowance. Recording such an adjustment could have a material effect on the Company's financial condition or results of operations.

Income tax expense is based on the distribution of profit before income tax among the various taxing jurisdictions in which we operate, adjusted as required by the income tax laws of each taxing jurisdiction. Changes in the distribution of profits and losses among taxing jurisdictions may have a significant impact on our effective income tax rate. The Company does not consider the undistributed earnings of our foreign subsidiaries to be indefinitely reinvested outside of the United States.

Pensions and Other Postretirement Benefits

The Company provides retirement benefits to certain employees, including defined benefit pension plans and postretirement medical plans. The determination of benefit obligations and expense is based on actuarial models. In order to measure benefit costs and obligations using these models, assumptions are made with regard to the discount rate, expected return on plan assets, cash balance crediting rate, lump sum conversion rate and the assumed rate of compensation increases. In addition, retiree medical care cost trend rates are a key assumption used exclusively in determining costs for the Company's postretirement health care and life insurance benefit plans.

Stock-based Compensation

The Company accounts for stock-based compensation for stock options and stock appreciation rights under the fair value method and uses the Black-Scholes-Merton model to estimate the value of such stock-based awards granted to its employees and non-executive directors. Expected volatility is based upon the historical volatility of a peer group for a period equal to the expected term, as the Company does not have adequate history to calculate its own volatility and believes the expected volatility will approximate the historical volatility of the peer group. The Company does not currently anticipate paying dividends. The expected term represents the period of time the grants are expected to be outstanding. The risk-free interest rate is based on the United States Treasury yield curve in effect at the time of the grant.

The Company values its stock-based compensation for restricted stock awards and restricted stock units based on the closing market price of the Company's common stock on the date of grant. The Company accounts for its stock-based compensation for performance awards based on the closing market price of the Company's common stock on the date of grant and for performance awards that include market conditions based upon the Monte Carlo simulation model.

Leases

The Company determines if an arrangement is a lease at inception. Operating leases are included in operating lease right-of-use (“ROU”) assets, other current liabilities, and operating lease liabilities on our condensed consolidated balance sheets. Operating lease ROU assets and operating lease liabilities are recognized based on the present value of the future minimum lease payments over the lease term at commencement date. As most of the Company’s leases do not provide an implicit rate, the Company uses its incremental borrowing rate based on the information available at commencement date in determining the present value of future payments. The operating lease ROU asset also includes any lease payments made before lease commencement and initial direct costs and excludes lease incentives. The Company’s lease terms may include options to extend or terminate the lease when it is reasonably certain that we will exercise that option. Lease expense for minimum lease payments is recognized on a straight-line basis over the lease term.

The Company has lease agreements with lease and non-lease components that the Company has elected to account for as single lease components.

Earnings Per Share

The calculation of earnings per share is based on the weighted average number of common shares or common stock equivalents outstanding during the applicable period. The dilutive effect of common stock equivalents is excluded from basic earnings per share and is included in the calculation of diluted earnings per share. Potentially dilutive securities include outstanding stock options and unvested restricted stock units, restricted stock and performance awards. Employee equity share options, restricted stock units, restricted stock, performance awards and similar equity instruments granted by the Company are treated as potential common shares outstanding in computing diluted earnings per share. Diluted shares outstanding are calculated based on the average share price for each fiscal period using the treasury stock method. Under the treasury stock method, the amount the employee must pay for exercising stock options, the amount of compensation cost for future service that the Company has not yet recognized, and the amount of benefits that would be recorded in additional paid-in capital when the award becomes deductible for tax purposes are assumed to be used to repurchase shares.

Equity Method Investments

The Company’s investments in and advances to unconsolidated affiliates are accounted for under the equity method if the Company exercises significant influence or has an investment in a limited partnership that is considered to be greater than minor. These investments and advances are classified as investments in and advances to unconsolidated affiliates on the accompanying consolidated balance sheets. The Company records its pro rata share of the earnings, adjusted for accretion of basis difference, of these investments in equity in earnings (losses) of unconsolidated affiliates on the accompanying consolidated statements of income. The Company reviews its investments in and advances to unconsolidated affiliates for impairment whenever events or changes in circumstances indicate that the carrying amounts may not be recoverable.

Treasury Stock

The Company records treasury stock purchases under the cost method. Upon reissuance of treasury stock, amounts in excess of the acquisition cost are credited to additional paid in capital. If the Company reissues treasury stock at an amount below its acquisition cost and additional paid in capital associated with prior treasury stock transactions is insufficient to cover the difference between the acquisition cost and the reissue price, this difference is recorded in retained earnings.

Recently Issued Accounting Standards

Accounting pronouncements adopted as of December 31, 2019

In February 2018, the FASB issued new accounting guidance that will allow a reclassification from accumulated other comprehensive income to retained earnings for “stranded income tax effects” resulting from the Tax Act. Because the income statement impact related to the reduction of the historical corporate income tax rate under the Tax Act is required to be included in income tax expense, the guidance acknowledges that the income tax effects of items within accumulated other comprehensive income (“stranded income tax effects”) do not reflect the appropriate income tax rate. The Company adopted this new accounting guidance on January 1, 2019 using the aggregate portfolio approach. The Company elected the option to not reclassify accumulated other comprehensive income to retained earnings for “stranded income tax effects” resulting from the Tax Act.

In August 2017, the FASB issued new accounting guidance that will allow more financial and nonfinancial hedging strategies to be eligible for hedge accounting. It also amends the presentation and disclosure requirements and changes how companies assess hedge effectiveness. It is intended to more closely align hedge accounting with risk management strategies, simplify the application of hedge accounting, and increase transparency as to the scope and results of hedging programs. The Company adopted this new accounting guidance on January 1, 2019. The adoption of this new accounting guidance did not have a material effect on the Company's consolidated financial statements.

In February 2016, the FASB issued new accounting guidance that requires lessees to recognize almost all leases on their balance sheet as a right-of-use asset and a lease liability. The income statement will reflect lease expense for operating leases, and amortization and interest expense for financing leases. The Company adopted this new accounting guidance on January 1, 2019 and elected the practical expedients upon transition that retained the lease classification, initial direct costs and determination of whether contracts are or contain a lease, for any leases that existed prior to adoption of the new guidance. The Company also elected the transition method which allows for disclosures to be updated prospectively and prior periods to be presented in accordance with previous guidance. The adoption of this standard had a material impact on the Company's condensed consolidated balance sheets but did not have a material impact on the Company's condensed consolidated results of operations or cash flows.

Accounting pronouncements issued but not adopted as of December 31, 2019

In January 2020, the FASB issued new accounting guidance that states any equity security transitioning from the alternative method of accounting to the equity method, or vice versa, due to an observable transaction, will be remeasured immediately before the transition. In addition, the new accounting guidance clarifies the accounting for certain non-derivative forward contracts or purchased call options to acquire equity securities stating such instruments will be measured using the fair value principles before settlement or exercise. The new accounting guidance will be effective for the Company on January 1, 2021 on a prospective basis. Early adoption is permitted. The Company is currently evaluating the impact of this new accounting guidance on its consolidated financial statements.

In December 2019, the FASB issued new accounting guidance to clarify and simplify the accounting for income taxes. Changes under the new guidance includes eliminating certain exceptions related to the approach for intraperiod tax allocation, the methodology for calculating income taxes in an interim period and the recognition of deferred tax liabilities for outside basis differences. The new accounting guidance will be effective for the Company on January 1, 2021. Early adoption is permitted. The Company is currently evaluating the impact of this new accounting guidance on its consolidated financial statements.

In August 2018, the FASB issued new accounting guidance that clarifies and aligns the accounting for implementation costs for hosting arrangements with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software. The new accounting guidance will be effective for the Company on January 1, 2020. The adoption of this new accounting guidance is not expected to have a material effect on the Company's consolidated financial statements.

In August 2018, the FASB issued new accounting guidance that modifies the disclosure requirements for employers that sponsor defined benefit pension or other postretirement plans. The new accounting guidance will be effective for the Company on January 1, 2021. Early adoption is permitted. The adoption of this new accounting guidance is not expected to have a material effect on the Company's consolidated financial statements.

In August 2018, the FASB issued new accounting guidance that modifies the disclosure requirements in Topic 820, Fair Value Measurement, by removing certain disclosure requirements related to the fair value hierarchy, modifying existing disclosure requirements related to measurement uncertainty and adding new disclosure requirements, such as disclosing the changes in unrealized gains and losses for the period included in other comprehensive income for recurring Level 3 fair value measurements held at the end of the reporting period and disclosing the range and weighted average of significant unobservable inputs used to develop Level 3 fair value measurements. The new accounting guidance will be effective for the Company on January 1, 2020. The adoption of this new accounting guidance is not expected to have a material effect on the Company's consolidated financial statements.

In January 2017, the FASB issued new accounting guidance that simplifies the measurement of goodwill by eliminating the step two impairment test. Step two measures a goodwill impairment loss by comparing the implied fair value of goodwill with the carrying amount of that goodwill. The new guidance requires a comparison of the Company's fair value of a reporting unit with the carrying amount and the Company is required to recognize an impairment charge for the amount by which the carrying amount exceeds the fair value. The new accounting guidance will be effective for the Company on January 1, 2020. Based on current impairment test results, the Company does not expect a material effect on the Consolidated Financial Statements. However, the impact of the new accounting guidance will depend on the performance of the reporting units and the market conditions at the time of adoption.

In June 2016, the FASB issued a new accounting standard intended to provide financial statement users with more decision-useful information about expected credit losses and other commitments to extend credit held by the reporting entity. The standard

replaces the incurred loss impairment methodology in current GAAP with one that reflects expected credit losses and requires consideration of a broader range of reasonable and supportable information to inform credit loss estimates. The standard will be effective for the Company on January 1, 2020. The adoption of this new accounting guidance is not expected to have a material effect on the Company's consolidated financial statements.

2. Revenues by Geography, Concentration of Credit Risk and Remaining Performance Obligations

The Company attributes revenues to geographical region based upon where the services are performed. The following tables represent revenues by geographical region and reportable segment for the years ended December 31, 2019, 2018 and 2017:

(in millions)	Year Ended December 31, 2019			
	Technology & Analytics Solutions	Research & Development Solutions	Contract Sales & Medical Solutions	Total
Revenues:				
Americas	\$ 2,370	\$ 2,693	\$ 399	\$ 5,462
Europe and Africa	1,543	1,734	200	3,477
Asia-Pacific	573	1,361	215	2,149
Total revenues	\$ 4,486	\$ 5,788	\$ 814	\$ 11,088

(in millions)	Year Ended December 31, 2018			
	Technology & Analytics Solutions	Research & Development Solutions	Contract Sales & Medical Solutions	Total
Revenues:				
Americas	\$ 2,087	\$ 2,553	\$ 358	\$ 4,998
Europe and Africa	1,520	1,693	235	3,448
Asia-Pacific	530	1,219	217	1,966
Total revenues	\$ 4,137	\$ 5,465	\$ 810	\$ 10,412

(in millions)	Year Ended December 31, 2017			
	Technology & Analytics Solutions	Research & Development Solutions	Contract Sales & Medical Solutions	Total
Revenues:				
Americas	\$ 1,801	\$ 2,375	\$ 430	\$ 4,606
Europe and Africa	1,372	1,663	251	3,286
Asia-Pacific	509	1,067	234	1,810
Total revenues	\$ 3,682	\$ 5,105	\$ 915	\$ 9,702

No individual country, except for the United States and the United Kingdom, accounted for 10% or more of total revenues for the year ended December 31, 2019 and 2018. For the year ended December 31, 2019, revenues in the United States and the United Kingdom accounted for 45% and 10% of total revenue, respectively. For the year ended December 31, 2018, revenues in the United States and the United Kingdom accounted for 43% and 11% of total revenue, respectively.

No individual country, except for the United States, accounted for 10% or more of total revenues for the year ended December 31, 2017. For the year ended December 31, 2017, revenue in the United States accounted for 42% of total revenue.

No individual customer represented 10% or more of total revenues for the years ended December 31, 2019, 2018 or 2017.

Transaction Price Allocated to the Remaining Performance Obligations

As of December 31, 2019, approximately \$20.0 billion of revenue is expected to be recognized in the future from remaining performance obligations. The Company expects to recognize revenue on approximately 35% of these remaining performance obligations over the next twelve months, with the balance recognized thereafter. The customer contract transaction price allocated to the remaining performance obligations differs from backlog in that it does not include wholly unperformed contracts under which the customer has a unilateral right to cancel the arrangement. The Company applied the practical expedient that permits the omission of prior period information about its remaining performance obligations. No other practical expedients were applied.

3. Trade Accounts Receivable, Unbilled Services and Unearned Income

Trade accounts receivables and unbilled services consist of the following:

(in millions)	December 31,	
	2019	2018
Trade accounts receivable:		
Billed	\$ 1,312	\$ 1,279
Unbilled services	1,286	1,130
Trade accounts receivable and unbilled services	2,598	2,409
Allowance for doubtful accounts	(16)	(15)
Trade accounts receivable and unbilled services, net	<u>\$ 2,582</u>	<u>\$ 2,394</u>

Unbilled services and unearned income was as follows:

(in millions)	December 31,		Change
	2019	2018	
Unbilled services	\$ 1,286	\$ 1,130	\$ 156
Unearned income	(1,014)	(1,007)	(7)
Net balance	<u>\$ 272</u>	<u>\$ 123</u>	<u>\$ 149</u>

Unbilled services, which is comprised of approximately equal parts of unbilled receivables and contract assets as of December 31, 2019, increased by \$156 million as compared to December 31, 2018. Contract assets are unbilled services for which invoicing is based on the timing of certain milestones related to service contracts for clinical research whereas unbilled receivables are billable upon the passage of time. Unearned income increased by \$7 million over the same period resulting in an increase of \$149 million in the net balance of unbilled services and unearned income between December 31, 2019 and 2018. Growth in the net balance is driven by the difference in timing of revenue recognition in accordance with ASC 606, Revenue from Contracts with Customers, related to the Company's Research & Development Solutions contracts (which is based on the percentage of costs incurred) versus the timing of invoicing, which is based on certain milestones.

Bad debt expense recognized on the Company's receivables and unbilled services was de minimis for the years ended December 31, 2019, 2018 and 2017.

4. Investments

Debt, Equity and Other Securities

Current

The Company's short-term investments in debt, equity and other securities consist primarily of trading investments in mutual funds and are measured at fair value with realized and unrealized gains and losses recorded in other expense (income), net on the accompanying consolidated statements of income.

Long-term

ASU 2016-01 became effective on January 1, 2018. ASU 2016-01 requires entities to measure equity investments (except those accounted for under the equity method, those that result in consolidation of the investee and certain other investments) at fair value and recognize any changes in fair value in net income at the end of each reporting period. Entities can no longer classify equity investments as trading or available for sale and can no longer recognize unrealized holding gains and losses on equity securities classified previously as available for sale in other comprehensive income (loss). Entities can no longer use the cost method of accounting as it was previously applied for equity securities that do not have readily determinable fair values.

For equity investments that do not have readily determinable fair values and do not qualify for the existing practical expedient in Accounting Standards Codification ("ASC") 820 "Fair Value Measurement" ("ASC 820") to estimate fair value using the net asset value per share of the investment, the guidance provides a new measurement alternative. Entities may choose to measure those investments at cost, less any impairment, plus or minus changes resulting from observable price changes in orderly transactions for the identical or a similar investment of the same issuer at each reporting period.

During the fourth quarter of 2018, the Company recorded the cumulative adoption of ASU 2016-01 within stockholders' equity.

Unconsolidated Affiliates

The Company accounts for its investments in and advances to unconsolidated affiliates under the equity method of accounting and records its pro rata share of its losses or earnings from these investments in equity in earnings (losses) of unconsolidated affiliates. The following is a summary of the Company's investments in and advances to unconsolidated affiliates:

(in millions)	December 31,	
	2019	2018
NovaQuest Pharma Opportunities Fund III, L.P. ("NQ Fund III")	\$ 19	\$ 30
NovaQuest Pharma Opportunities Fund IV, L.P. ("NQ Fund IV")	8	13
NovaQuest Pharma Opportunities Fund V, L.P. ("NQ Fund V")	13	14
NovaQuest Private Equity Fund I, L.P. ("NQ PE Fund I")	4	4
Cenduit™ ("Cenduit")	—	4
NostraData Pty Ltd. ("NostraData")	8	7
Inteliquet ("Inteliquet")	18	20
Helparound ("Helparound")	4	—
Other	13	9
	<u>\$ 87</u>	<u>\$ 101</u>

Variable Interest Entities

As of December 31, 2019, the Company's investments in unconsolidated variable interest entities ("VIEs") and its estimated maximum exposure to loss were as follows:

(in millions)	Investments in Unconsolidated VIEs	Maximum Exposure to Loss
NQ Fund III	\$ 19	\$ 25
NQ Fund IV	8	10
NQ Fund V	13	44
NQ PE Fund I	4	7
Pappas Life Science Ventures V, L.P.	2	5
	<u>\$ 46</u>	<u>\$ 91</u>

5. Derivatives

Foreign Exchange Risk Management

The Company transacts business in more than 100 countries and is subject to risks associated with fluctuating foreign exchange rates. Accordingly, the Company enters into foreign currency forward contracts to (i) hedge certain forecasted foreign exchange cash flows arising from service contracts ("Service Contract Hedging") and (ii) hedge non-United States dollar anticipated intercompany royalties ("Royalty Hedging"). It is the Company's policy to enter into foreign currency transactions only to the extent necessary to reduce earnings and cash flow volatility associated with foreign exchange rate movements. The Company does not enter into foreign currency transactions for investment or speculative purposes. The principal currencies hedged are the Euro, the British Pound, the Japanese Yen, the Swiss Franc and the Canadian dollar.

Service Contract Hedging and Royalty Hedging contracts are designated as cash flow hedges and are carried at fair value, with changes in the fair value recorded to AOCI. The change in fair value is reclassified from AOCI to earnings in the period in which the hedged transaction occurs. These contracts have various expiration dates through November 2020.

As of December 31, 2019 and 2018, the Company had open Service Contract Hedging and Royalty Hedging contracts to hedge certain forecasted foreign currency cash flow transactions occurring in 2020 and 2019 with notional amounts totaling \$148 million and \$202 million, respectively. For accounting purposes these hedges are considered highly effective. As of December 31, 2019 and 2018, the Company had recorded gross unrealized gains (losses) of \$4 million and less than (\$1) million and \$5 million and (\$3) million, respectively, related to these contracts. Upon expiration of the hedge instruments in 2019, the Company reclassified the unrealized holding gains and losses on the derivative instruments included in AOCI into earnings. The unrealized gains (losses) are included in other current assets and liabilities on the accompanying consolidated balance sheets as of December 31, 2019 and 2018.

Interest Rate Risk Management

The Company purchases interest rate caps and has entered into interest rate swap agreements for purposes of managing its exposure to interest rate fluctuations.

In April 2014, IMS Health entered into United States dollar and Euro denominated interest rate swap agreements (“2014 Swaps”) to hedge interest rate exposure on notional amounts of approximately \$600 million of its borrowings. The 2014 Swaps commenced between April and June 2014 and expire at various times through March 2021. As of December 31, 2019, only one of the 2014 Swaps remain unexpired, with a notional value of \$325 million. On this agreement, the Company pays a fixed rate of 1.6% and receives a variable rate of interest equal to the greater of three-month Euro Interbank Offered Rate (“EURIBOR”) or the equivalent to LIBOR, and 1%. During 2017, the 2014 Swaps ceased to be considered highly effective for accounting purposes and as such, the Company discontinued hedge accounting and prospective changes in the fair value of the Swaps are recognized in earnings.

On June 3, 2015, the Company entered into seven forward starting interest rate swaps (“2015 Swaps”) in an effort to limit its exposure to changes in the variable interest rate on its Senior Secured Credit Facilities (as defined below). Interest on the swaps began accruing on June 30, 2016, and the interest rate swaps expire at various times through March 2020. As of December 31, 2019, only three of the 2015 Swaps were still outstanding. The Company pays a fixed rate of 2.1% and receives a variable rate of interest equal to the three-month LIBOR on these agreements.

The critical terms of the 2015 Swaps are substantially the same as the underlying borrowings. These interest rate swaps are being accounted for as cash flow hedges as these transactions were executed to hedge the Company’s interest payments and for accounting purposes are considered highly effective. As such, the effective portion of the hedges is recorded as unrealized gains (losses) on derivatives included in AOCI and the ineffective portion of the hedges is recognized in earnings.

On July 19, 2018, the Company entered into two forward starting interest rate swaps (“2018 Swaps”) with a total notional value of \$500 million in an effort to limit its exposure to changes in the variable interest rate on its Senior Secured Credit Facilities (as defined below). Interest on the 2018 Swaps began accruing on June 28, 2019 and the interest rate swaps expire on June 28, 2024. The Company pays a fixed rate of 3.0% and receives a variable rate of interest equal to the three-month LIBOR on the 2018 Swaps.

The fair value of these interest rate swaps represents the present value of the anticipated net payments the Company will make to the counterparty, which, when they occur, are reflected as interest expense on the consolidated statements of income. These interest rate swaps will result in a total debt mix of approximately 59% fixed rate debt and 41% variable rate debt.

Net Investment Risk Management

The Company designates its foreign currency denominated debt as a hedge of its net investment in certain foreign subsidiaries to reduce the volatility in stockholders’ equity caused by changes in the Euro exchange rate with respect to the United States dollar, which is accounted for as a cash flow hedge. As of December 31, 2019, these borrowings (net of original issue discount) were €5,273 million (\$5,915 million). The effective portion of foreign exchange gains or losses on the remeasurement of the debt is recognized in the cumulative translation adjustment component of AOCI with the related offset in long-term debt. Those amounts would be reclassified from AOCI to earnings upon the sale or substantial liquidation of these net investments. The amount of foreign exchange gains related to the net investment hedge included in the cumulative translation adjustment component of AOCI for the year ended December 31, 2019 was \$97 million.

The fair values of the Company's derivative instruments and the line items on the accompanying consolidated balance sheets to which they were recorded are summarized in the following table:

(in millions)	Balance Sheet Classification	December 31, 2019			December 31, 2018		
		Assets	Liabilities	Notional	Assets	Liabilities	Notional
Derivatives designated as hedging instruments:							
Foreign exchange forward contracts	Other current assets and liabilities	\$ 4	—	\$ 148	\$ 5	\$ 3	\$ 202
Interest rate swaps	Other assets and liabilities	—	27	875	3	9	890
Interest rate caps	Deposits and other assets	—	—	—	1	—	700
Derivatives not designated as hedging instruments:							
Interest rate swaps	Other liabilities	—	3	325	—	5	432
Total derivatives		<u>\$ 4</u>	<u>\$ 30</u>		<u>\$ 9</u>	<u>\$ 17</u>	

The pre-tax effect of the Company's cash flow hedging instruments on other comprehensive (loss) income is summarized in the following table:

(in millions)	Year Ended December 31,		
	2019	2018	2017
Foreign exchange forward contracts	\$ 2	\$ (9)	\$ (5)
Interest rate derivatives	(22)	(6)	9
Total	<u>\$ (20)</u>	<u>\$ (15)</u>	<u>\$ 4</u>

The Company expects approximately \$3 million of pre-tax unrealized losses related to its foreign exchange contracts and interest rate derivatives included in AOCI at December 31, 2019 to be reclassified into earnings within the next twelve months. The total amount of cash flow hedge effect on the income statement is immaterial for year ended December 31, 2019.

6. Fair Value Measurements

The Company records certain assets and liabilities at fair value. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants at the measurement date. A three-level fair value hierarchy that prioritizes the inputs used to measure fair value is described below. This hierarchy requires entities to maximize the use of observable inputs and minimize the use of unobservable inputs. The three levels of inputs used to measure fair value are as follows:

- Level 1—Quoted prices in active markets for identical assets or liabilities.
- Level 2—Observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets; quoted prices for identical or similar assets and liabilities in markets that are not active; or other inputs that are observable or can be corroborated by observable market data.
- Level 3—Unobservable inputs that are supported by little or no market activity. This includes certain pricing models, discounted cash flow methodologies and similar techniques that use significant unobservable inputs.

The carrying values of cash, cash equivalents, accounts receivable and accounts payable approximated their fair values at December 31, 2019 and 2018 due to their short-term nature. At December 31, 2019 and 2018, the fair value of total debt approximated \$11,925 million and \$10,850 million, respectively, as determined under Level 1 and Level 2 measurements for these financial instruments.

Recurring Fair Value Measurements

The following table summarizes the fair value of the Company's financial assets and liabilities that are measured and reported at fair value on a recurring basis as of December 31, 2019:

(in millions)	Level 1	Level 2	Level 3	Total
Assets:				
Marketable securities	\$ 79	\$ —	\$ —	\$ 79
Derivatives	—	4	—	4
Total	<u>\$ 79</u>	<u>\$ 4</u>	<u>\$ —</u>	<u>\$ 83</u>
Liabilities:				
Derivatives	\$ —	\$ 30	\$ —	\$ 30
Contingent consideration	—	—	113	113
Total	<u>\$ —</u>	<u>\$ 30</u>	<u>\$ 113</u>	<u>\$ 143</u>

The following table summarizes the fair value of the Company's financial assets and liabilities that are measured and reported at fair value on a recurring basis as of December 31, 2018:

(in millions)	Level 1	Level 2	Level 3	Total
Assets:				
Marketable securities	\$ 63	\$ —	\$ —	\$ 63
Derivatives	—	9	—	9
Total	<u>\$ 63</u>	<u>\$ 9</u>	<u>\$ —</u>	<u>\$ 72</u>
Liabilities:				
Derivatives	\$ —	\$ 17	\$ —	\$ 17
Contingent consideration	—	—	123	123
Total	<u>\$ —</u>	<u>\$ 17</u>	<u>\$ 123</u>	<u>\$ 140</u>

Below is a summary of the valuation techniques used in determining fair value:

Marketable securities—The Company values trading and available-for-sale securities using the quoted market value of the securities held.

Derivatives—Derivatives consist of foreign exchange contracts and interest rate swaps. The fair value of foreign exchange contracts is based on observable market inputs of spot and forward rates or using other observable inputs. The fair value of the interest rate swaps is the estimated amount that the Company would receive or pay to terminate such agreements, taking into account market interest rates and the remaining time to maturities or using market inputs with mid-market pricing as a practical expedient for bid-ask spread.

Contingent consideration—The Company values contingent consideration related to business combinations using a weighted probability calculation of potential payment scenarios discounted at rates reflective of the risks associated with the expected future cash flows. Assumptions used to estimate the fair value of contingent consideration include various financial metrics (revenue performance targets and operating forecasts) and the probability of achieving the specific targets.

The following table summarizes the changes in Level 3 financial assets and liabilities measured on a recurring basis for the year ended December 31:

(in millions)	Contingent Consideration		
	2019	2018	2017
Balance as of January 1	\$ 123	\$ 69	\$ 18
Business combinations	40	53	57
Contingent consideration paid	(46)	(24)	(4)
Revaluations included in earnings and foreign currency translation adjustments	(4)	25	(2)
Balance as of December 31	<u>\$ 113</u>	<u>\$ 123</u>	<u>\$ 69</u>

The current portion of contingent consideration is included within accrued expenses and the long-term portion is included within other liabilities on the accompanying consolidated balance sheets. Revaluations of contingent consideration are recognized in other expense (income), net on the accompanying consolidated statements of income.

Non-recurring Fair Value Measurements

Certain assets are carried on the accompanying consolidated balance sheets at cost and are not remeasured to fair value on a recurring basis. These assets include equity investments that do not have readily determinable fair values that are assessed for impairment quarterly or annually and when a triggering event occurs, and goodwill and identifiable intangible assets that are tested for impairment annually and when a triggering event occurs. See Note 4 and 8 for additional information.

As of December 31, 2019, assets carried on the balance sheet and not remeasured to fair value on a recurring basis totaled approximately \$17,808 million and were identified as Level 3. These assets are comprised of cost and equity method investments of \$135 million, goodwill of \$12,159 million and other identifiable intangibles, net of \$5,514 million.

Cost and Equity Method Investments—The inputs available for valuing investments in non-public portfolio companies are generally not easily observable. The valuation of non-public investments requires judgment by the Company due to the absence of quoted market values, inherent lack of liquidity and the long-term nature of such assets. When a triggering event occurs, the Company considers a wide range of available market data when assessing the estimated fair value. Such market data includes observations of the trading multiples of public companies considered comparable to the private companies being valued as well as publicly disclosed merger transactions involving comparable private companies. In addition, valuations are adjusted to account for company-specific issues, the lack of liquidity inherent in a non-public investment and the fact that comparable public companies are not identical to the companies being valued. Such valuation adjustments are necessary because in the absence of a committed buyer and completion of due diligence similar to that performed in an actual negotiated sale process, there may be company-specific issues that are not fully known that may affect value. Further, a variety of additional factors are reviewed by the Company, including, but not limited to, financing and sales transactions with third parties, current operating performance and future expectations of the particular investment, changes in market outlook and the third-party financing environment. Because of the inherent uncertainty of valuations, estimated valuations may differ significantly from the values that would have been used had a ready market for the securities existed, and the differences could be material.

Goodwill—Goodwill represents the difference between the purchase price and the fair value of the identifiable tangible and intangible net assets resulting from business combinations. The Company performs a qualitative analysis to determine whether it is more likely than not that the estimated fair value of a reporting unit is less than its book value. This includes a qualitative analysis of macroeconomic conditions, industry and market considerations, internal cost factors, financial performance, fair value history and other company specific events. If this qualitative analysis indicates that it is more likely than not that the estimated fair value is less than the book value for the respective reporting unit, the Company applies a two-step impairment test in which the Company determines whether the estimated fair value of the reporting unit is in excess of its carrying value. If the carrying value of the net assets assigned to the reporting unit exceeds the estimated fair value of the reporting unit, the Company performs the second step of the impairment test to determine the implied estimated fair value of the reporting unit's goodwill. The Company determines the implied estimated fair value of goodwill by determining the present value of the estimated future cash flows for each reporting unit and comparing to the net book value of assets and liabilities exclusive of goodwill. See Note 8 for additional information.

Definite-lived Intangible Assets—If a triggering event occurs, the Company determines the estimated fair value of definite-lived intangible assets by determining the present value of the expected cash flows. See Note 8 for additional information.

Indefinite-lived Intangible Asset—If a qualitative analysis indicates that it is more likely than not that the estimated fair value is less than the carrying value of an indefinite-lived intangible asset, the Company determines the estimated fair value of the indefinite-lived intangible asset (trade name) by determining the present value of the estimated royalty payments on an after-tax basis that it would be required to pay the owner for the right to use such trade name. If the carrying amount exceeds the estimated fair value, an impairment loss is recognized in an amount equal to the excess.

7. Property and Equipment

The major classes of property and equipment were as follows:

(in millions)	December 31,	
	2019	2018
Land, buildings and leasehold improvements	\$ 331	\$ 326
Equipment	570	521
Furniture and fixtures	81	82
Transportation equipment	73	72
Property and equipment, gross	1,055	1,001
Less accumulated depreciation	(597)	(567)
Property and equipment, net	\$ 458	\$ 434

Property and equipment depreciation expense was as follows:

(in millions)	Year Ended December 31,		
	2019	2018	2017
Depreciation expense	\$ 128	\$ 125	\$ 125

8. Goodwill and Identifiable Intangible Assets

As of December 31, 2019, the Company has approximately \$5,514 million of identifiable intangible assets, of which approximately \$18 million, relating to a trade name, is deemed to be indefinite-lived and, accordingly, is not being amortized. Amortization expense associated with identifiable definite-lived intangible assets was as follows:

(in millions)	Year Ended December 31,		
	2019	2018	2017
Amortization expense	\$ 1,074	\$ 1,016	\$ 886

Estimated amortization expense for existing identifiable intangible assets is expected to be approximately \$1,072 million, \$801 million, \$462 million, \$386 million and \$317 million for the years ending December 31, 2020, 2021, 2022, 2023 and 2024, respectively. Estimated amortization expense can be affected by various factors, including future acquisitions or divestitures of service and/or licensing and distribution rights or impairments.

The following is a summary of identifiable intangible assets:

(in millions)	As of December 31, 2019			As of December 31, 2018		
	Gross Amount	Accumulated Amortization	Net Amount	Gross Amount	Accumulated Amortization	Net Amount
Definite-lived identifiable intangible assets:						
Client relationships and backlog	\$ 4,809	\$ (1,303)	\$ 3,506	\$ 4,620	\$ (863)	\$ 3,757
Trademarks, trade names and other	528	(158)	370	526	(108)	418
Databases	1,836	(1,185)	651	1,828	(823)	1,005
Software and related assets	1,620	(665)	955	1,279	(543)	736
Non-compete agreements	32	(18)	14	27	(10)	17
	<u>\$ 8,825</u>	<u>\$ (3,329)</u>	<u>\$ 5,496</u>	<u>\$ 8,280</u>	<u>\$ (2,347)</u>	<u>\$ 5,933</u>
Indefinite-lived identifiable intangible assets:						
Trade names	<u>\$ 18</u>	<u>\$ —</u>	<u>\$ 18</u>	<u>\$ 18</u>	<u>\$ —</u>	<u>\$ 18</u>

The following is a summary of goodwill by segment for the years ended December 31, 2019 and 2018:

(in millions)	Technology & Analytics Solutions	Research & Development Solutions	Contract Sales & Medical Solutions	Consolidated
Balance as of December 31, 2017	10,348	1,385	117	11,850
Business combinations	135	49	18	202
Impact of foreign currency fluctuations and other	(244)	(7)	(1)	(252)
Balance as of December 31, 2018	10,239	1,427	134	11,800
Business combinations	216	215	5	436
Impact of foreign currency fluctuations and other	(81)	4	—	(77)
Balance as of December 31, 2019	<u>\$ 10,374</u>	<u>\$ 1,646</u>	<u>\$ 139</u>	<u>\$ 12,159</u>

There were no goodwill impairment losses as of December 31, 2019 or 2018.

9. Accrued Expenses

Accrued expenses consist of the following:

(in millions)	December 31,	
	2019	2018
Compensation, including bonuses, fringe benefits and payroll taxes	\$ 687	\$ 660
Restructuring	67	74
Interest	53	45
Client contract related	763	678
Professional fees	80	91
Contingent consideration and deferred purchase price	52	90
Other	235	220
	<u>\$ 1,937</u>	<u>\$ 1,858</u>

10. Credit Arrangements

The following is a summary of the Company's revolving credit facilities at December 31, 2019:

Facility	Interest Rates
\$1,500 million (revolving credit facility)	LIBOR in the relevant currency borrowed plus a margin of 1.50% at December 31, 2019
\$25 million (receivables financing facility)	LIBOR Market Index Rate (1.76% at December 31, 2019) plus 0.90%
£10 million (approximately \$13 million) general banking facility	Bank's base rate of 0.75% at December 31, 2019 plus 1%

The following table summarizes the Company's debt at the dates indicated:

(dollars in millions)	December 31,	
	2019	2018
Senior Secured Credit Facilities:		
Term A Loan due 2023—U.S. Dollar LIBOR at average floating rates of 3.44%	\$ 770	\$ 812
Term A Loan due 2023—Euro LIBOR at average floating rates of 1.50%	387	416
Term B Loan due 2024—U.S. Dollar LIBOR at average floating rates of 3.69%	535	535
Term B Loan due 2024—Euro LIBOR at average floating rates of 2.00%	1,306	1,346
Term B Loan due 2025—U.S. Dollar LIBOR at average floating rates of 3.69%	733	741
Term B Loan due 2025—U.S. Dollar LIBOR at average floating rates of 3.69%	936	945
Term B Loan due 2025—Euro LIBOR at average floating rates of 2.00%	644	664
Revolving Credit Facility due 2023:		
U.S. Dollar denominated borrowings—U.S. Dollar LIBOR at average floating rates of 3.26%	154	620
Japanese Yen denominated borrowings—Japanese Yen LIBOR at average floating rates of 1.50%	212	—
5.0% Senior Notes due 2027—U.S. Dollar denominated	1,100	—
5.0% Senior Notes due 2026—U.S. Dollar denominated	1,050	1,050
2.875% Senior Notes due 2025—Euro denominated	471	481
3.25% Senior Notes due 2025—Euro denominated	1,598	1,631
3.5% Senior Notes due 2024—Euro denominated	701	715
4.875% Senior Notes due 2023—U.S. Dollar denominated	—	800
2.25% Senior Notes due 2028—Euro denominated	808	—
Receivables financing facility due 2022—U.S. Dollar LIBOR at average floating rates of 2.66%	300	300
Principal amount of debt	11,705	11,056
Less: unamortized discount and debt issuance costs	(60)	(49)
Less: current portion	(100)	(100)
Long-term debt	\$ 11,545	\$ 10,907

Contractual maturities of long-term debt at December 31, 2019 are as follows:

(in millions)	
2020	\$ 100
2021	100
2022	400
2023	1,372
2024	2,511
Thereafter	7,222
	<u>\$ 11,705</u>

At December 31, 2019, there were bank guarantees totaling approximately £0.8 million (approximately \$1.1 million) issued against the availability of the general banking facility with a European headquartered bank through their operations in the United Kingdom.

Senior Secured Credit Agreement and Senior Notes

2019 Financing Transactions

At December 31, 2019, the Company's Fourth Amended and Restated Credit Agreement, as amended (the "Credit Agreement") provided financing through several senior credit facilities (collectively, the "Senior Secured Credit Facilities") of approximately \$6,811 million, which consisted of \$5,677 million principal amounts of debt outstanding (as detailed in the table above), \$3 million of issued standby letters of credit and \$1,131 million of available borrowing capacity on the \$1,500 million revolving credit facility. On December 18, 2019, the Company entered into Amendment No. 6 to the Credit Agreement; pursuant to the Amendment, that amended the interest rate applicable to the Issuer's Term B Loan due 2024—U.S. Dollar LIBOR and Term B Loan due 2025—U.S. Dollar LIBOR was reduced to LIBOR plus 1.75% per annum and the LIBOR floor applicable to the Issuer's Term B-1 Dollar Loans was reduced to 0% per annum. On August 9, 2019, the Company entered into Amendment No. 5 to the Credit Agreement that repriced the Euro LIBOR floor applicable to the Euro-denominated Term B Loan due 2024 and Term B Loan due 2025 to 0% per annum.

On August 13, 2019, IQVIA Inc. (the "Issuer"), a wholly owned subsidiary of the Company, completed the issuance and sale of €720 million in gross proceeds of the Issuer's 2.25% Senior Notes due 2028 (the "2.25% Notes"). The 2.25% Notes were issued pursuant to an Indenture, dated August 13, 2019, among the Issuer, U.S. Bank National Association, as trustee of the 2.25% Notes, and certain subsidiaries of the Issuer as guarantors. The net proceeds from the notes offering, together with available cash, were used to redeem the Issuer's outstanding 4.875% senior notes due 2023 (the "4.875% Notes"), and to pay fees and expenses related to the notes offering. On July 29, 2019, the Issuer issued a conditional notice of redemption with respect to the 4.875% Notes, for a total redemption price equal to the sum of the principal amount of the 4.875% Notes, accrued and unpaid interest on the 4.875% Notes to the redemption date and the applicable redemption premium. The Issuer's obligations with respect to the 4.875% Notes were discharged on August 13, 2019. The 2.25% Notes are unsecured obligations of the Issuer, will mature on January 15, 2028 and bear interest at the rate of 2.25% per annum, with interest payable semi-annually on January 15 and July 15 of each year, beginning on January 15, 2020. The Issuer may redeem the Notes prior to their final stated maturity, subject to a customary make-whole premium, at any time prior to July 15, 2022 (subject to a customary "equity claw" redemption right) and thereafter subject to a redemption premium declining from 101.125% to 0.000%.

On May 10, 2019, the Issuer completed the issuance and sale of \$1.1 billion in gross proceeds of the Issuer's 5.00% Senior Notes due 2027 (the "5.00% Notes"). The 5.00% Notes were issued pursuant to an Indenture, dated May 10, 2019, among the Issuer, U.S. Bank National Association, as trustee of the 5.00% Notes, and certain subsidiaries of the Issuer as guarantors. The net proceeds from this notes offering were used to repay existing borrowings under the Issuer's revolving credit facility, to pay fees and expenses related to the notes offering and for other general corporate purposes. The 5.00% Notes are unsecured obligations of the Issuer, will mature on May 15, 2027 and bear interest at the rate of 5.00% per annum, with interest payable semi-annually on May 15 and November 15 of each year, beginning on November 15, 2019. The Issuer may redeem the 5.00% Notes prior to their final stated maturity, subject to a customary make-whole premium, at any time prior to May 15, 2022 (subject to a customary "equity claw" redemption right) and thereafter subject to a redemption premium declining from 2.500% to 0.000%.

2018 Financing Transactions

At December 31, 2018, the Company's Fourth Amended and Restated Credit Agreement, as amended (the "Credit Agreement") provided financing through several senior secured credit facilities (collectively, the "Senior Secured Credit Facilities") of up to approximately \$6,959 million, which consisted of \$6,079 million principal amounts of debt outstanding (as detailed in the table above) and \$880 million of available borrowing capacity on the \$1,500 million revolving credit facility that expires in 2023.

On June 11, 2018, the Company entered into Amendment No. 4 to the Credit Agreement ("Amendment No. 4") that amended the terms of the existing term A loans and revolving credit facility to extend the maturity from 2021 to 2023 and reduce the applicable interest rate from LIBOR plus a margin ranging from 1.75% to 2.50% to LIBOR plus a margin ranging from 1.25% to 2.00%. In connection with Amendment No. 4, the Company recognized a \$2 million loss on extinguishment of debt, which includes fees and related expenses. The amendments with respect to the revolving credit facility and the term A loans became effective on June 13, 2018.

Under Amendment No. 4, the Company also placed additional term B loans. The additional term B loans will mature in 2025 and were comprised of \$950 million of U.S. dollar denominated term B loans and €583 million (\$681 million) Euro denominated term B loans. The U.S. dollar denominated term B loans bear interest based on the U.S. Dollar LIBOR plus a

margin ranging from 1.75% to 2.00%. The Euro denominated term B loans bear interest based on the Euro LIBOR with a floor ranging from 0.50% to 0.75%, plus a margin of 2.00%. The proceeds of the additional term B loans were used to pay down the revolving credit facility and \$650 million of existing term B loans due 2024 and to pay fees and expenses in connection with the transactions.

On April 6, 2018, the Company entered into Amendment No. 3 to the Credit Agreement that increased the amount of commitments available to the Company and certain of its subsidiaries to \$1,500 million under the revolving credit facility. No other terms of the Credit Agreement were amended.

Receivables Financing Facility

On December 19, 2019, the Company amended its receivables financing facility to extend the term of the facility to December 19, 2022.

On December 5, 2014, the Company entered into a four-year arrangement to securitize certain of its accounts receivable. Under the receivables financing facility, certain of the Company's accounts receivable are sold on a non-recourse basis by certain of its consolidated subsidiaries to another of its consolidated subsidiaries, a bankruptcy-remote special purpose entity ("SPE"). The SPE obtained a term loan and revolving loan commitment from a third-party lender, secured by liens on the assets of the SPE, to finance the purchase of the accounts receivable, which includes a \$275 million term loan and a \$25 million revolving loan commitment. The revolving loan commitment may be increased by an additional \$35 million as amounts are repaid under the term loan. The Company has guaranteed the performance of the obligations of existing and future subsidiaries that sell and service the accounts receivable under the receivables financing facility. The assets of the SPE are not available to satisfy any of the Company's obligations or any obligations of its subsidiaries. As of December 31, 2019, no additional amounts of revolving loans were available under the receivables financing facility.

Restrictive Covenants

The Company's debt agreements provide for certain covenants and events of default customary for similar instruments, including a covenant not to exceed a specified ratio of consolidated senior secured net indebtedness to Consolidated EBITDA, as defined in the Credit Agreement and a covenant to maintain a specified minimum interest coverage ratio. If an event of default occurs under any of the Company's or the Company's subsidiaries' financing arrangements, the creditors under such financing arrangements will be entitled to take various actions, including the acceleration of amounts due under such arrangements, and in the case of the lenders under the Credit Agreement, other actions permitted to be taken by a secured creditor. The Company's long-term debt arrangements contain usual and customary restrictive covenants that, among other things, place limitations on the Company's ability to declare dividends. At December 31, 2019, the Company was in compliance in all material respects with the financial covenants under the Company's financing arrangements.

11. Leases

The Company has operating leases for corporate offices, datacenters, motor vehicles and certain equipment, many of which contain renewal and escalation clauses. The leases expire at various dates through 2029 with options to cancel certain leases at various intervals. In determining the lease term at lease commencement, the Company includes the noncancellable term and the periods which the Company deems it is reasonably certain to exercise or not to exercise a renewal or cancellation option. As of December 31, 2019, the Company has additional operating leases, primarily for corporate offices, that have not yet commenced of \$7 million. These operating leases will commence in the first quarter of 2020 with lease terms through 2025.

The components of lease expense were as follows:

(in millions)	Classification	Year Ended December 31, 2019	
Operating lease cost ⁽¹⁾	Selling, general and administrative expenses	\$	193
Total lease cost		\$	193

(1) Includes variable lease costs, which are immaterial.

Rental expenses under lease agreements were \$197 million and \$197 million in 2018 and 2017, respectively.

Other information related to leases was as follows:

(in millions)	Year Ended December 31, 2019
Supplemental Cash Flow:	
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flows from operating leases	\$ 195
Right-of-use assets obtained in exchange for lease obligations:	
Operating leases	\$ 96
Weighted Average Remaining Lease Term:	
Operating leases	5.01 years
Weighted Average Discount Rate:	
Operating leases	4.22%

Future minimum lease payments under non-cancellable leases as of December 31, 2019 were as follows:

(in millions)	Operating Leases
2020	\$ 160
2021	129
2022	105
2023	81
2024	54
Thereafter	86
Total future minimum lease payments	615
Less imputed interest	(66)
Total	<u>\$ 549</u>
Reported as of December 31, 2019:	
Other current liabilities	\$ 153
Operating lease liabilities	396
Total	<u>\$ 549</u>

The Company elected the alternative modified transition method and as such, included the following prior period information as previously disclosed in accordance with ASC 840.

The following is a summary of future minimum payments under operating leases that have initial or remaining non-cancelable lease terms in excess of one year at December 31, 2018:

(in millions)	Operating Leases
2019	\$ 167
2020	136
2021	108
2022	90
2023	69
Thereafter	119
Total minimum lease payments	<u>\$ 689</u>

12. Contingencies

The Company and its subsidiaries are involved in legal and tax proceedings, claims and litigation arising in the ordinary course of business. Management periodically assesses the Company's liabilities and contingencies in connection with these matters based upon the latest information available. For those matters where management currently believes it is probable that the Company will incur a loss and that the probable loss or range of loss can be reasonably estimated, the Company has recorded reserves in the consolidated financial statements based on its best estimates of such loss. In other instances, because of the uncertainties related to either the probable outcome or the amount or range of loss, management is unable to make a reasonable estimate of a liability, if any.

However, even in many instances where the Company has recorded an estimated liability, the Company is unable to predict with certainty the final outcome of the matter or whether resolution of the matter will materially affect the Company's results of operations, financial position or cash flows. As additional information becomes available, the Company adjusts its assessments and estimates of such liabilities accordingly.

The Company routinely enters into agreements with third parties, including our clients and suppliers, all in the normal course of business. In these agreements, the Company sometimes agrees to indemnify and hold harmless the other party for any damages such other party may suffer as a result of potential intellectual property infringement and other claims. The Company has not accrued a liability with respect to these matters generally, as the exposure is considered remote.

Based on its review of the latest information available, management does not expect the impact of pending legal and tax proceedings, claims and litigation, either individually or in the aggregate, to have a material adverse effect on the Company's results of operations, cash flows or financial position. However, one or more unfavorable outcomes in any claim or litigation against the Company could have a material adverse effect for the period in which it is resolved. The following is a summary of certain legal matters involving the Company.

On February 13, 2014, a group of approximately 1,200 medical doctors and 900 private individuals filed a civil lawsuit with the Seoul Central District Court against IMS Korea and two other defendants, KPA and the Korean Pharmaceutical Information Center ("KPIC"). The civil lawsuit alleges KPA and KPIC collected their personal information in violation of applicable privacy laws without the necessary consent through a software system installed on pharmacy computer systems in Korea, and that personal information was transferred to IMS Korea and sold to pharmaceutical companies. On September 11, 2017, the District Court issued a final decision that the encryption in use by the defendants since June 2014 was adequate to meet the requirements of the Korean Personal Information Privacy Act ("PIPA") and the sharing of non-identified information for market research purposes was allowed under PIPA. The District Court also found an earlier version of encryption was insufficient to meet PIPA requirements, but no personal data had been leaked or re-identified. The District Court did not award any damages to plaintiffs. Approximately 280 medical doctors and 200 private individuals appealed the District Court decision. On May 3, 2019, the Appellate Court issued a final decision in which it concluded all of the non-identified information transferred by KPIC to IMS Korea for market research purposes violated PIPA, but did not award any damages to plaintiffs (affirming the District Court's decision on this latter point). On May 24, 2019, approximately 247 plaintiffs appealed the Appellate Court's decision to the Supreme Court. The Company believes the appeal is without merit and intends to vigorously defend its position.

On July 23, 2015, indictments were issued by the Seoul Central District Prosecutors' Office in South Korea against 24 individuals and companies alleging improper handling of sensitive health information in violation of, among others, South Korea's Personal Information Protection Act. IMS Korea and two of its employees were among the individuals and organizations indicted. Although there is no assertion that IMS Korea used patient identified health information in any of its offerings, prosecutors allege that certain of IMS Korea's data suppliers should have obtained patient consent when they converted sensitive patient information into non-identified data and that IMS Korea had not taken adequate precautions to reduce the risk of re-identification. On February 14, 2020, the Seoul Central District Court acquitted IMS Korea and its two employees of the charges of improper handling of sensitive health information.

On January 10, 2017, Quintiles IMS Health Incorporated and IMS Software Services Ltd. (collectively "IQVIA Parties"), filed a lawsuit in the U.S. District Court for the District of New Jersey against Veeva Systems, Inc. ("Veeva") alleging Veeva unlawfully used IQVIA Parties intellectual property to improve Veeva data offerings, to promote and market Veeva data offerings and to improve Veeva technology offerings. IQVIA Parties seek injunctive relief, appointment of a monitor, the award of compensatory and punitive damages and reimbursement of all litigation expenses, including reasonable attorneys' fees and costs. On March 13, 2017, Veeva filed counterclaims alleging anticompetitive business practices in violation of the Sherman Act and state laws. Veeva claims damages in excess of \$200 million, and is seeking punitive damages and litigation costs, including attorneys' fees. We believe the counterclaims are without merit, reject all counterclaims raised by Veeva and intend to vigorously defend IQVIA Parties' position and pursue our claims against Veeva. Since the initial filings, the parties have filed additional litigations against each other, primarily concerning the use of IQVIA data with various other Veeva products. The parties are currently engaging in the discovery process.

13. Stockholders' Equity

Preferred Stock

The Company is authorized to issue 1.0 million shares of preferred stock, \$0.01 per share par value. No shares of preferred stock were issued and outstanding as of December 31, 2019 or 2018.

Equity Repurchase Program

On February 13, 2019, the Company's Board of Directors (the "Board") increased the stock repurchase authorization under a previously approved equity repurchase program (the "Repurchase Program") by \$2.0 billion, which increased the total amount that has been authorized under the Repurchase Program to \$7.725 billion since the plan's inception in October 2013. The Repurchase Program does not obligate the Company to repurchase any particular amount of common stock, and it may be modified, extended, suspended or discontinued at any time.

On October 30, 2013, the Board first approved the Repurchase Program, authorizing the repurchase of up to \$125 million of either the Company's common stock or vested in-the-money employee stock options, or a combination thereof. The Board increased the stock repurchase authorization under the Repurchase Program with respect to the repurchase of its common stock by \$600 million, \$1.5 billion, \$2 billion and \$1.5 billion in 2015, 2016, 2017 and 2018, respectively, which increased the total amount that has been authorized under the Repurchase Program to \$5.725 billion. The Repurchase Program does not obligate the Company to repurchase any particular amount of common stock or vested in-the-money employee stock options, and it may be modified, extended, suspended or discontinued at any time.

As of December 31, 2019, the Company has remaining authorization to repurchase up to \$1.3 billion of its common stock under the Repurchase Program. In addition, from time to time, the Company has repurchased and may continue to repurchase common stock through private or other transactions outside of the Repurchase Program.

2019 Offerings

In March 2019, the Company completed an underwritten secondary public offering of 5,000,000 shares of its common stock held by certain of the Company's remaining private equity sponsors (the "Selling Stockholders"), of which the Company repurchased 1,000,000 shares for an aggregate purchase price of approximately \$140.8 million. The Company did not offer any stock in this transaction and did not receive any proceeds from the sale of the shares by the Selling Stockholders. Pursuant to an agreement with the underwriters, the Company's per-share purchase price for repurchased shares was the same as the per share purchase price payable by the underwriters to the Selling Stockholders.

2018 Offerings

In November 2018, the Company completed an underwritten secondary public offering of 6,000,000 shares of its common stock held by certain of the Company's principal stockholders (the "November 2018 Selling Stockholders"), of which the Company repurchased 2,000,000 shares for an aggregate purchase price of approximately \$247 million. The Company did not offer any stock in this transaction and did not receive any proceeds from the sale of the shares by the November 2018 Selling Stockholders. Pursuant to an agreement with the underwriter, the Company's per-share purchase price for repurchased shares was the same as the per-share purchase price payable by the underwriter to the November 2018 Selling Stockholders.

In June 2018, the Company completed an underwritten secondary public offering of 12,000,000 shares of its common stock held by certain of the Company's principal stockholders (the "June Selling Stockholders"), of which the Company repurchased 4,000,000 shares for an aggregate purchase price of approximately \$412 million. The Company did not offer any stock in this transaction and did not receive any proceeds from the sale of the shares by the June Selling Stockholders. Pursuant to an agreement with the underwriter, the Company's per-share purchase price for repurchased shares was the same as the per-share purchase price payable by the underwriter to the June Selling Stockholders.

Other Equity Repurchases

In August 2019, the Company agreed to purchase an aggregate of 1,000,000 shares of its common stock, par value \$0.01 per share, in a private transaction from certain of its existing shareholders (the "Repurchase"). In addition to the Repurchase, certain of the Company's remaining private equity sponsors informed the Company that they have sold 4,000,000 shares of the Company's common stock pursuant to Rule 144 under the Securities Act of 1933, as amended, for a total of 5,000,000 shares.

In November 2017, the Company completed an underwritten secondary public offering of 10,000,000 shares of its common stock held by certain of the Company’s principal stockholders (the “November Selling Stockholders”), of which the Company repurchased 2,500,000 shares for an aggregate purchase price of approximately \$255 million. These shares were repurchased outside of the Company’s existing Repurchase Program. The Company did not offer any stock in this transaction and did not receive any proceeds from the sale of the shares by the November Selling Stockholders. Pursuant to an agreement with the underwriter, the Company’s per-share purchase price for repurchased shares was the same as the per-share purchase price payable by the underwriter to the November Selling Stockholders.

Summary

Below is a summary of the share repurchases made both under and outside of the Repurchase Program:

(in millions, except per share data)	Year Ended December 31,		
	2019	2018	2017
Number of shares of common stock repurchased	6.6	12.6	30.9
Aggregate purchase price	\$ 945	\$ 1,396	\$ 2,620
Average price per share	\$ 143.02	\$ 111.23	\$ 84.80

Non-controlling Interests

The Company contributed businesses to a joint venture with Quest Diagnostics Incorporated (“Quest”) that was recorded at book value (carryover basis) because the Company owns 60% of the joint venture and maintains control of these businesses. As a result, Quest’s non-controlling interest in the joint venture, referred to as Q² Solutions, is equal to 40%. Quest’s non-controlling interest was \$260 million at December 31, 2019. During the year ended December 31, 2019, Q² Solutions distributed dividends of \$18 million to Quest and did not receive a contribution from Quest to fund ongoing operational and strategic activities.

Subsequent Events

On February 13, 2020, the Company agreed to purchase at market price an aggregate of 1,000,000 shares of its common stock, par value \$0.01 per share, in a private transaction from certain of its existing shareholders (the “February 2020 Repurchase”). In addition to the February 2020 Repurchase, certain of the Company’s remaining private equity sponsors informed the Company that they have sold 4,000,000 shares of the Company’s common stock pursuant to Rule 144 under the Securities Act of 1933, as amended, for a total of 5,000,000 shares.

14. Business Combinations

The Company completed several immaterial acquisitions during the year ended December 31, 2019. The Company’s assessment of fair value and the purchase price allocation related to these acquisitions is preliminary and subject to change upon completion. Further adjustments may be necessary as additional information related to the fair values of assets acquired and liabilities assumed is assessed during the measurement period (up to one year from the acquisition date). The accompanying consolidated financial statements include the results of the acquisitions subsequent to their respective closing dates. Pro forma information is not presented as pro forma results of operations would not be significantly different to the actual results of operations of the Company.

The following table provides certain financial information for these acquisitions, including the preliminary allocations of the purchase prices to certain intangible assets acquired and goodwill:

(in millions)	Amortization Period	2019	2018
Total cost of acquisitions, net of cash acquired ⁽¹⁾		\$ 667	\$ 372
Amounts recorded in the Consolidated Balance Sheets:			
Goodwill		\$ 437	\$ 202
Portion of goodwill deductible for income tax purposes		186	15
Intangible assets:			
Customer relationships	6-18 years	\$ 216	\$ 126
Backlog	2 years	11	10
Non-compete agreements	3-5 years	6	4
Software	3-8 years	35	44
Trade names	1-8 years	3	8
Total intangible assets		\$ 271	\$ 192

(1) Total cost of acquisitions, net of cash acquired, includes contingent consideration and deferred purchase payments of \$79 million and \$63 million for the years ended December 31, 2019 and 2018, respectively.

15. Restructuring

The Company has continued to take restructuring actions in 2019 to align its resources and reduce overcapacity to adapt to changing market conditions and integrate acquisitions. These actions include closing facilities, consolidating functional activities, eliminating redundant positions, and aligning resources with customer requirements. These restructuring actions are expected to continue into 2020. During the first quarter of 2019, there was also a decrease of \$9 million in facility exit costs due to the reclassification of restructuring into a long-term operating lease liability related to the implementation of ASC 842, Leases.

The management approved plans resulted in approximately \$75 million, \$68 million and \$63 million of restructuring expense, net of reversals, which consisted of severance, facility closure costs and other exit-related costs in 2019, 2018, and 2017, respectively.

The following amounts were recorded for the restructuring plans:

(in millions)	Severance and Related Costs	Exit Costs	Total
Balance at December 31, 2017	\$ 80	\$ 4	\$ 84
Expense, net of reversals	45	23	68
Payments	(76)	(6)	(82)
Foreign currency translation and other	(2)	6	4
Balance at December 31, 2018	\$ 47	\$ 27	\$ 74
Expense, net of reversals	75	—	75
Payments	(57)	(16)	(73)
Foreign currency translation and other	(1)	(8)	(9)
Balance at December 31, 2019	<u>\$ 64</u>	<u>\$ 3</u>	<u>\$ 67</u>

The reversals were due to changes in estimates primarily resulting from the redeployment of staff and higher than expected voluntary terminations. Restructuring costs are not allocated to the Company's reportable segments as they are not part of the segment performance measures regularly reviewed by management. The Company expects the majority of the restructuring accruals at December 31, 2019 will be paid in 2020.

16. Income Taxes

The components of income before income taxes and equity in earnings (losses) of unconsolidated affiliates are as follows:

(in millions)	Year Ended December 31,		
	2019	2018	2017
Domestic	\$ (504)	\$ (521)	\$ (527)
Foreign	856	849	821
	<u>\$ 352</u>	<u>\$ 328</u>	<u>\$ 294</u>

The components of income tax expense attributable to continuing operations are as follows:

(in millions)	Year Ended December 31,		
	2019	2018	2017
Current expense:			
Federal and state	\$ 11	\$ 17	\$ (3)
Foreign	248	233	222
	<u>259</u>	<u>250</u>	<u>219</u>
Deferred (benefit) expense:			
Federal and state	(109)	(170)	(1,167)
Foreign	(34)	(21)	(44)
	<u>(143)</u>	<u>(191)</u>	<u>(1,211)</u>
	<u>\$ 116</u>	<u>\$ 59</u>	<u>\$ (992)</u>

The differences between the Company's consolidated income tax expense attributable to continuing operations and the expense computed at the United States statutory income tax rate of 21% in 2019, 21% in 2018 and 35% in 2017 were as follows:

(in millions)	Year Ended December 31,		
	2019	2018	2017
Federal income tax expense at statutory rate	\$ 74	\$ 69	\$ 103
State and local income taxes, net of federal effect	—	(2)	(14)
Research and development	(21)	(20)	(9)
Foreign nontaxable interest income	—	—	(7)
United States taxes recorded on foreign earnings ^(*)	9	40	6
Tax contingencies	27	16	17
Foreign Derived Intangible Income ("FDII")	20	(25)	—
Foreign rate differential	26	27	(97)
Equity compensation	(14)	(8)	(19)
Non-taxable gain on acquisition	(5)	—	—
Non-controlling interest	(6)	(3)	(5)
Tax Act impact	—	(35)	(966)
Other	6	—	(1)
	<u>\$ 116</u>	<u>\$ 59</u>	<u>\$ (992)</u>

^(*) Includes impact of GILTI, and other U.S. taxes on foreign earnings.

In 2019 the U.S. Treasury Department issued final regulations on the transition tax and proposed regulations on FDII, which was introduced by the Tax Act described below. While the final regulations related to the transition tax did not have a material impact on the Company, the proposed guidance for FDII had an unfavorable impact. Although the proposed guidance for FDII is not authoritative and subject to change in the regulatory review process, the company reversed the tax benefit recorded in 2018 by recording a tax expense of \$25 million for this impact. It is expected that during 2020 the U.S. Treasury Department will issue final regulations on FDII.

On December 22, 2017, the U.S. government enacted the Tax Act. The Tax Act is comprehensive legislation that includes provisions that lower the federal corporate income tax rate from 35% to 21% beginning in 2018 and imposes a one-time transition tax on undistributed foreign earnings. ASC 740 "Income Taxes" generally requires the effects of the tax law change to be recorded in the

period of enactment. Staff Accounting Bulletin No. 118 (“SAB 118”) addresses situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete an accounting assessment and allows companies to record provisional amounts during a measurement period not to extend beyond one year. Subsequent changes to provisional amounts are reported in the period in which they are determined.

In 2018 the Company recorded a \$35 million benefit related to finalizing the accounting related to the Tax Act. Additionally, in 2018 the Company recorded a benefit of \$25 million related to FDII, as well as a tax expense of \$35 million related to GILTI, as a result of the new provisions of the Tax Act.

In 2017, due to the Tax Act, the Company revalued its U.S. deferred tax assets and liabilities and recorded a benefit to deferred income taxes of \$966 million.

Undistributed earnings of the Company’s foreign subsidiaries amounted to approximately \$2,997 million at December 31, 2019. With the enactment of the Tax Act, the Company does not consider any of its foreign earnings as indefinitely reinvested.

The income tax effects of temporary differences from continuing operations that give rise to significant portions of deferred income tax assets (liabilities) are presented below:

(in millions)	December 31,	
	2019	2018
Deferred income tax assets:		
Net operating loss and capital loss carryforwards	\$ 246	\$ 244
Tax credit carryforwards	332	300
Accrued expenses and unearned income	55	70
Employee benefits	168	181
Operating lease liability	119	—
Other	79	51
	<u>999</u>	<u>846</u>
Valuation allowance for deferred income tax assets	(266)	(226)
Total deferred income tax assets	<u>733</u>	<u>620</u>
Deferred income tax liabilities:		
Amortization and depreciation	(1,105)	(1,209)
Operating lease right-of-use assets	(119)	—
Other	(36)	(38)
Total deferred income tax liabilities	<u>(1,260)</u>	<u>(1,247)</u>
Net deferred income tax liabilities	<u>\$ (527)</u>	<u>\$ (627)</u>

During 2019 the net deferred tax liabilities decreased mainly due to amortization of intangibles related to the merger between Quintiles and IMS health (“Merger”).

The Company had federal, state and local, and foreign tax loss carryforwards and tax credits, the tax effect of which was \$622 million as of December 31, 2019. Of this amount, \$31 million has an indefinite carryforward period, and the remaining \$591 million expires at various times beginning in 2020. Some of the federal losses are subject to limitations under the Internal Revenue Code, however, management expects these losses to be utilized during the carryforward periods.

In 2019, the Company increased its valuation allowance by \$40 million to \$266 million at December 31, 2019 from \$226 million at December 31, 2018. The valuation allowance increased primarily due to current year branch basket foreign tax credits that the Company has determined are not more likely than not to be used before their expiration. The valuation allowance also increased due to an increase in the value of the U.S. state net operating losses.

A reconciliation of the beginning and ending amount of gross unrecognized income tax benefits is presented below:

(in millions)	Year Ended December 31,		
	2019	2018	2017
Balance at January 1	\$ 94	\$ 82	\$ 64
Additions based on tax positions related to the current year	5	4	11
Additions for income tax positions of prior years	33	26	13
Impact of changes in exchange rates	—	(2)	4
Settlements with tax authorities	(1)	(2)	(2)
Reductions for income tax positions of prior years	(6)	—	(2)
Reductions due to the lapse of the applicable statute of limitations	(5)	(14)	(6)
Balance at December 31	<u>\$ 120</u>	<u>\$ 94</u>	<u>\$ 82</u>

As of December 31, 2019, the Company had total gross unrecognized income tax benefits of \$120 million associated with over 100 jurisdictions in which the Company conducts business that, if recognized, would reduce the Company's effective income tax rate.

The Company's policy for recording interest and penalties relating to uncertain income tax positions is to record them as a component of income tax expense in the accompanying consolidated statements of income. In 2019, 2018 and 2017, the amount of interest and penalties recorded as an addition to income tax expense in the accompanying consolidated statements of income was \$2 million, \$0 million and \$3 million, respectively. As of December 31, 2019 and 2018, the Company had accrued approximately \$18 million and \$16 million, respectively, of interest and penalties.

The Company believes that it is reasonably possible that a decrease of up to \$13 million in gross unrecognized income tax benefits for federal, state and foreign exposure items may be necessary within the next 12 months due to lapse of statutes of limitations or uncertain tax positions being effectively settled. The Company believes that it is reasonably possible that a decrease of up to \$23 million in gross unrecognized income tax benefits for foreign items may be necessary within the next 12 months due to payments. For the remaining uncertain income tax positions, it is difficult at this time to estimate the timing of the resolution.

The Company conducts business globally and, as a result, files income tax returns in the United States federal jurisdiction and various state and foreign jurisdictions. In the normal course of business, the Company is subject to examination by taxing authorities throughout the world. The following table summarizes the tax years that remain open for examination by tax authorities in the most significant jurisdictions in which the Company operates:

United States	2015-2018
India	2006-2019
Japan	2013-2018
United Kingdom	2018
Switzerland	2014-2018

In certain of the jurisdictions noted above, the Company operates through more than one legal entity, each of which has different open years subject to examination. The table above presents the open years subject to examination for the most material of the legal entities in each jurisdiction. Additionally, it is important to note that tax years are technically not closed until the statute of limitations in each jurisdiction expires. In the jurisdictions noted above, the statute of limitations can extend beyond the open years subject to examination.

Due to the geographic breadth of the Company's operations, numerous tax audits may be ongoing throughout the world at any point in time. Income tax liabilities are recorded based on estimates of additional income taxes that may be due upon the conclusion of these audits. Estimates of these income tax liabilities are made based upon prior experience and are updated in light of changes in facts and circumstances. However, due to the uncertain and complex application of income tax regulations, it is possible that the ultimate resolution of audits may result in liabilities that could be materially different from these estimates. In such an event, the Company will record additional income tax expense or income tax benefit in the period in which such resolution occurs.

17. Employee Benefit Plans

Pension and Postretirement Benefit Plans

The Company sponsors both funded and unfunded defined benefit pension plans. These plans provide benefits based on various criteria, including, but not limited to, years of service and salary. The Company also sponsors an unfunded postretirement benefit plan in the United States that provides health and prescription drug benefits to retirees who meet the eligibility requirements. The Company uses a December 31 measurement date for all pension and postretirement benefit plans.

The following table summarizes changes in the benefit obligation, the plan assets and the funded status of the pension benefit plans:

(in millions)	Pension Benefits			
	United States Plans		Non-United States Plans	
	December 31			
	2019	2018	2019	2018
Obligation and funded status:				
Change in benefit obligation:				
Projected benefit obligation at beginning of year	\$ 335	\$ 349	\$ 513	\$ 559
Service costs	12	13	25	26
Interest cost	14	12	9	9
Actuarial (gains) losses	50	(30)	55	(29)
Business combinations	—	—	—	1
Benefits paid	(10)	(9)	(19)	(21)
Contributions	—	—	2	2
Amendments	—	—	—	2
Curtailments	—	—	(5)	(3)
Settlements	—	—	(1)	(12)
Foreign currency fluctuations and other	—	—	12	(21)
Projected benefit obligation at end of year	401	335	591	513
Change in plan assets:				
Fair value of plan assets at beginning of year	330	360	366	391
Actual return on plan assets	77	(24)	34	(2)
Contributions	4	3	26	29
Benefits paid	(10)	(9)	(19)	(21)
Settlements	—	—	(1)	(11)
Foreign currency fluctuations and other	—	—	12	(20)
Fair value of plan assets at end of year	401	330	418	366
Funded status	\$ —	\$ (5)	\$ (173)	\$ (147)

The following table summarizes the amounts recognized in the consolidated balance sheets related to the pension benefit plans:

(in millions)	Pension Benefits			
	United States Plans		Non-United States Plans	
	December 31			
	2019	2018	2019	2018
Deposits and other assets	\$ 45	\$ 36	\$ 11	\$ 17
Accrued expenses	2	2	13	11
Other long-term liabilities	42	38	171	153
AOCI	13	11	(30)	7

At December 31, 2019, the benefit obligation for other postretirement benefits was \$2 million, with \$1 million recorded in accrued expenses and \$1 million included within other long-term liabilities; and the amount recognized in AOCI was less than \$1 million.

The following table summarizes the accumulated benefit obligation for all pension benefit plans:

(in millions)	Pension Benefits			
	United States Plans		Non-United States Plans	
	December 31			
	2019	2018	2019	2018
Accumulated benefit obligation	\$ 395	\$ 330	\$ 557	\$ 476

The following table provides the information for pension plans with an accumulated benefit obligation in excess of plan assets and projected benefit obligations in excess of plan assets:

(in millions)	Pension Benefits			
	United States Plans		Non-United States Plans	
	December 31			
	2019	2018	2019	2018
Plans with accumulated benefit obligation in excess of plan assets:				
Accumulated benefit obligation	\$ 47	\$ 43	\$ 485	\$ 189
Fair value of plan assets	4	3	334	59
Plans with projected benefit obligation in excess of plan assets:				
Projected benefit obligation	\$ 49	\$ 43	\$ 519	\$ 223
Fair value of plan assets	4	3	335	59

The components of net periodic benefit cost changes in plan assets and benefit obligations recognized in other comprehensive loss were as follows:

(in millions)	Pension Benefits					
	United States Plans			Non-United States Plans		
	Year Ended December 31,					
	2019	2018	2017	2019	2018	2017
Service cost	\$ 12	\$ 13	\$ 13	\$ 25	\$ 26	\$ 26
Interest cost	14	12	11	9	9	9
Expected return on plan assets	(25)	(27)	(24)	(16)	(15)	(14)
Amortization of actuarial losses	—	—	—	0	1	1
Curtailement gain	—	—	—	(5)	(3)	—
Settlement gain	—	—	—	0	(1)	—
Net periodic benefit cost	1	(2)	—	13	17	22
Other changes in plan assets and benefit obligations recognized in other comprehensive loss:						
Actuarial loss (gain) – current years	(2)	22	(4)	32	(15)	(4)
Prior service cost - current year	—	—	—	—	2	—
Curtailement gain - current year	—	—	—	5	3	—
Settlement gain - current year	—	—	—	—	1	—
Amortization of actuarial losses	—	—	—	—	(1)	(1)
Total recognized in other comprehensive loss (income)	(2)	22	(4)	37	(10)	(5)
Total recognized in net periodic benefit cost and other comprehensive loss (income)	\$ (1)	\$ 20	\$ (4)	\$ 50	\$ 7	\$ 17

All components of net periodic benefit cost other than service cost are recorded in other expense (income), net on the accompanying consolidated statements of income.

On October 26, 2018, the High Court of the United Kingdom issued a judgement relating to Guaranteed Minimum Pensions (“GMPs”) in the Lloyds case. The judgement concluded the schemes should be amended to equalize pension benefits for men and women in relation to guaranteed minimum pension benefits. A preliminary assessment by the Company’s actuarial advisors estimated an impact of approximately \$1.7 million between the two United Kingdom pension schemes, which has been recognized in AOCI as a prior service cost in 2018.

Assumptions

The weighted average assumptions used to determine net periodic benefit cost were as follows for the years ended December 31:

	Pension Benefits						Other Postretirement Benefits		
	United States Plans			Non-United States Plans			2019	2018	2017
	2019	2018	2017	2019	2018	2017			
Discount rate	4.42%	3.69%	4.17%	1.99%	1.91%	1.89%	3.80%	2.90%	2.90%
Rate of compensation increases	3.00%	3.00%	3.00%	4.54%	4.54%	5.17%	—	—	—
Expected return on plan assets	7.67%	7.69%	7.94%	4.02%	4.17%	4.16%	—	—	—

The weighted average assumptions used to determine benefit obligations were as follows at December 31:

	Pension Benefits				Other Postretirement Benefits	
	United States Plans		Non-United States Plans		2019	2018
	2019	2018	2019	2018		
Discount rate	3.52%	4.42%	1.45%	1.98%	2.70%	3.80%
Rate of compensation increases	3.00%	3.00%	2.78%	3.20%	—	—

The discount rate represents the interest rate used to determine the present value of the future cash flows currently expected to be required to settle the Company's defined benefit plan obligations. The discount rates are derived using weighted average yield curves on AA-rated corporate bonds. The cash flows from the Company's expected benefit obligation payments are then matched to the yield curve to derive the discount rates. At December 31, 2019, the discount rate ranged from 2.70% to 3.58% for the Company's United States pension plan and postretirement benefit plan. At December 31, 2019, the discount rate ranged from 1.68% to 2.10% for the Company's United Kingdom pension plans. The United States and United Kingdom plans represent approximately 75% of the consolidated benefit obligation as of December 31, 2019. The discount rates in other non-U.S. countries ranged from 0.17% to 8.37% at December 31, 2019.

The Company's assumption for the expected return on plan assets was determined by the weighted average of the long-term expected rate of return on each of the asset classes invested as of the balance sheet date. For plan assets invested in government bonds, the expected return was based on the yields on the relevant indices as of the balance sheet date. There is considerable uncertainty for the expected return on plan assets invested in equity and diversified growth funds. The expected rate of return on plan assets for the United States pension plans was 7.75% at January 1, 2020. Outside the United States, the range of applicable expected rates of return was 1.0% to 5.00% as of January 1, 2020, compared to 1.0% to 7.22% as of January 1, 2019. The expected return on assets ("EROA") was \$41 million and \$42 million and the actual return on assets was \$108 million and \$(26) million for the years ended December 31, 2019 and 2018, respectively.

Under the Company's United States qualified retirement plan, participants have a notional retirement account that increases with pay and investment credits. The rate used to determine the investment credit (cash balance crediting rate) varies monthly and is equal to 1/12th of the yield on 30-year U.S. Government Treasury Bonds, with a minimum of 0.25%. At retirement, the account is converted to a monthly retirement benefit.

At December 31, 2019, the Company's health care cost trend rate for the next seven years was assumed to be 6.0% and the assumed ultimate cost trend rate was 4.5%. The Company assumed that ultimate cost trend rate is reached in 2023.

Assumed health care cost trend rates could have a significant effect on the amounts reported for the health care plans. A one-percentage-point change in assumed health care cost trend rates at December 31, 2019 would have a de minimis effect on the total of service and interest cost and on the accumulated postretirement benefit obligation.

Plan Assets

The Company's pension plan weighted average asset allocations, by asset category, were as follows:

Asset Category	Plan Assets at December 31,					
	United States Plans		Non-United States Plans		Total	
	2019	2018	2019	2018	2019	2018
Equity securities	70.82%	67.58%	42.88%	45.22%	56.56%	55.83%
Debt securities	24.13	27.34	19.22	16.18	21.62	21.48
Real estate	5.05	5.08	—	—	2.48	2.41
Other	—	—	37.00	38.60	19.33	20.28
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

The target asset allocation for the Company's pension plans were as follows:

Asset Category	United States Plans	Non-United States Plans	Total
Equity securities	60-80%	35-50%	45-65%
Debt securities	20-30%	10-20%	10-30%
Real estate	0-10%	—%	0-5%
Other	—%	30-45%	10-30%

The following table summarizes United States plan assets measured at fair value:

Asset Category	December 31, 2019			December 31, 2018		
	Level 1	Level 2	Total	Level 1	Level 2	Total
	(in millions)					
Domestic equities	\$ 30	\$ —	\$ 30	\$ 31	\$ —	\$ 31
International equities	16	—	16	13	—	13
Corporate bonds	58	—	58	54	—	54
Real estate	20	—	20	16	—	16
Total assets in the fair value hierarchy	124	—	124	114	—	114
Common/collective trusts measured at net asset value ("NAV") ⁽¹⁾	—	—	277	—	—	216
Total	\$ 124	\$ —	\$ 401	\$ 114	\$ —	\$ 330

The following table summarizes non-United States plan assets measured at fair value:

Asset Category	December 31, 2019			December 31, 2018		
	Level 1	Level 2	Total	Level 1	Level 2	Total
	(in millions)					
International equities	\$ 2	\$ 56	\$ 58	\$ 2	\$ 53	\$ 55
Debt issued by national, state or local government	2	78	80	2	57	59
Diversified growth fund	—	—	—	—	—	—
Investments funds	—	9	9	—	8	8
Insurance contracts	—	153	153	—	136	136
Other	—	5	5	—	5	5
Total assets in the fair value hierarchy	4	301	305	4	259	263
Assets measured at NAV ⁽¹⁾	—	—	113	—	—	103
Total	\$ 4	\$ 301	\$ 418	\$ 4	\$ 259	\$ 366

⁽¹⁾ Certain investments that are measured at fair value using the net asset value per share (or its equivalent) practical expedient have not been classified in the fair value hierarchy. The fair value amounts presented in the above plan asset tables are intended to permit reconciliation of the fair value of plan assets in the fair value hierarchy to the plan asset amounts presented in the above funded status table as of December 31, 2019 and 2018.

Investments in mutual funds are valued at quoted market prices. Investments in common/collective trusts and pooled funds are valued at the NAV as reported by the trust. The NAV is based on the fair value of the underlying investments held by the fund less its liabilities. Insurance contracts are valued at the amount of the benefit liability. The Company has no Level 3 assets that rely on unobservable inputs to measure fair value.

Investment Policies and Strategies

The Company invests primarily in a diversified portfolio of equity securities that provide for long-term growth within reasonable and prudent levels of risk. The asset allocation targets established by the Company are strategic and applicable to the plan's long-term investing horizon. The portfolio is constructed and maintained to provide adequate liquidity to meet associated liabilities and minimize long-term expense and provide prudent diversification among asset classes in accordance with the principles of modern portfolio theory. The plan employs a diversified mix of actively managed investments around a core of passively managed index exposures in each asset class. Within each asset class, rapid market shifts, changes in economic conditions or an individual fund manager's outlook may cause the asset allocation to fall outside the prescribed targets. The majority of the Company's plan assets are measured quarterly against benchmarks established by the Company's investment advisors and the Company's Asset Management Committee, who review actual plan performance and have the authority to recommend changes as deemed appropriate. Assets are rebalanced periodically to their strategic targets to maintain the plan's strategic risk/reward characteristics. The Company periodically conducts asset liability modeling studies to ensure that the investment strategy is aligned with the obligations of the plans and that the assets will generate income and capital growth to meet the cost of current and future benefits that the plans provide. The pension plans do not have investments in Company stock at December 31, 2019 or 2018.

The portfolio for the Company's United Kingdom pension plans seek to invest in a range of suitable assets of appropriate liquidity that will generate in the most effective manner possible, income and capital growth to ensure that there are sufficient assets to meet benefit payments when they fall due, while controlling the long-term costs of the plans and avoiding short-term volatility of investment returns. The plans seek to achieve these objectives by investing in a mixture of real (equities) and monetary (fixed interest) assets. It recognizes that the returns on real assets, while expected to be greater over the long-term than those on monetary assets, are likely to be more volatile. A mixture across asset classes should nevertheless provide the level of returns required by the plans. The trustee periodically conducts asset liability modeling exercises to ensure the investments are aligned with the appropriate benchmark to better reflect the plans' liabilities. The trustee also undertakes to review this benchmark on a regular basis.

Cash Flows

Contributions

The Company expects to contribute approximately \$29 million in required contributions to its pension and postretirement benefit plans during 2020. The Company may make additional contributions into its pension plans in 2020 depending on, among other factors, how the funded status of those plans change or in order to meet minimum funding requirements as set forth in employee benefit and tax laws, plus additional amounts the Company may deem to be appropriate.

Estimated future benefit payments and subsidy receipts

The following benefit payments (net of expected participant contributions) for pension benefits are expected to be paid as follows:

(in millions)	Pension Benefits
2020	36
2021	37
2022	39
2023	41
2024	44
Years 2025 through 2029	246
	<u>\$ 443</u>

Benefit payments (net of expected participant contributions) for other postretirement benefits are expected to be de minimis over the periods presented.

Defined Contribution Plans

Defined contribution or profit sharing plans are offered in Australia, Austria, Belgium, Bulgaria, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hong Kong, Hungary, India, Ireland, Israel, Japan, Malaysia, the Netherlands, New Zealand, Poland, Slovakia, South Africa, Sweden, Switzerland, Taiwan, Thailand, the United States and the United Kingdom. In some cases, these plans are required by local laws or regulations.

In the United States, the Company has a 401(k) plan under which the Company matches employee deferrals at varying percentages and specified limits of the employee's salary. In 2019, 2018, and 2017, the Company expensed \$56 million, \$49 million and \$47 million, respectively, related to matching contributions.

Certain key executives of the Company participate in an unfunded defined contribution executive retirement plan, assumed in the Merger, which was frozen to additional accruals for future service contributions in 2012. Participants continue to receive an annual investment credit based on the average of the annual yields at the end of each month on the AA-AAA rated 10 plus year maturity component of the Merrill Lynch United States Corporate Bond Master Index.

Plans Accounted for as Postretirement Benefits

The Company provides certain executives with postretirement medical, dental and life insurance benefits. These benefits are individually negotiated arrangements in accordance with their individual employment arrangements. The above tables do not include the Company's expense or obligation associated with providing these benefits. The obligation related to these benefits was approximately \$10 million as of December 31, 2019, and the Company's expense for the year then ended was de minimis.

Stock Incentive Plans

Stock incentive plans provide incentives to eligible employees, officers and directors in the form of non-qualified stock options, incentive stock options, stock appreciation rights ("SARs"), restricted stock awards ("RSAs"), restricted stock units ("RSUs"), performance awards, covered annual incentive awards, cash-based awards and other stock-based awards, in each case subject to the terms of the stock incentive plans.

In April 2017, the Company's 2017 Incentive and Stock Award Plan (the "2017 Plan") was approved by the Company's stockholders. The 2017 Plan consolidates the unused share pools under the Company's 2014 Incentive and Stock Award Plan (the "2014 Plan"), the Company's 2013 Stock Incentive Plan (the "2013 Plan"), the Company's 2010 Equity Incentive Plan (the "2010 Plan") and the Company's 2008 Stock Incentive Plan (the "2008 Plan"), and together with the 2010 Plan, the 2013 Plan and the 2014 Plan (the "Prior Plans"), makes shares underlying outstanding awards granted under (but not ultimately delivered) the Prior Plans eligible for use in connection with new awards under the 2017 Plan. The 2017 Plan provides for the grant of stock options, SARs, restricted and deferred stock (including RSUs), performance awards, dividend equivalents, other stock-based awards and cash-based awards.

The fair value of stock options and SARs is estimated using the Black-Scholes-Merton option-pricing model. The fair value of restricted stock and RSUs is based on the closing market price of the Company's common stock on the date of grant. The fair value of the performance shares related to compound annual earnings per share ("EPS") growth and/or other internal performance measures is equal to the closing market price of the Company's common stock on the date of grant. The fair value of performance shares related to relative total shareholder return ("TSR") is determined based on a Monte Carlo simulation model.

The Company recognized stock-based compensation expense of \$146 million, \$113 million and \$106 million in 2019, 2018 and 2017, respectively. Stock-based compensation expense is included in selling, general and administrative expenses on the accompanying consolidated statements of income. The associated future income tax benefit recognized was \$22 million, \$19 million and \$21 million in 2019, 2018 and 2017, respectively. As of December 31, 2019, there was approximately \$82 million of total unrecognized stock-based compensation expense related to outstanding non-vested stock-based compensation arrangements, which the Company expects to recognize over a weighted average period of 0.80 years.

As of December 31, 2019, there were 11.4 million shares available for future grants under all of the Company's stock incentive plans.

The Company used the following assumptions when estimating the value of the stock-based compensation for stock options and SARs issued as follows:

	Year Ended December 31,		
	2019	2018	2017
Expected volatility	23 – 24%	22 – 24%	22 – 25%
Weighted average expected volatility	23%	22%	24%
Expected dividends	0.0%	0.0%	0.0%
Expected term (in years)	3.7 – 6.7	1.0 – 6.7	1.0 – 6.9
Risk-free interest rate	1.55 – 2.56%	2.05 – 3.00%	1.16 – 2.32%

Stock Options

The option price is determined by the Board at the date of grant and the options expire 10 years from the date of grant. The vesting schedule for options granted to employees is either (i) 25% per year beginning on the first anniversary of the date of grant; or (ii) 33% on the third anniversary of the date of grant and 67% on the fourth anniversary of the date of grant.

The Company's stock option activity in 2019 is as follows:

(in millions, except number of options and exercise price)	Number of Options	Weighted Average Exercise Price	Aggregate Intrinsic Value
Outstanding at December 31, 2018	2,574,224	\$ 34.09	\$ 211
Exercised	(1,099,428)	32.56	
Canceled	(16,455)	64.96	
Outstanding at December 31, 2019	<u>1,458,341</u>	\$ 34.90	\$ 174

The total intrinsic value of options exercised was approximately \$124 million, \$117 million and \$157 million in 2019, 2018 and 2017, respectively. The Company received cash of approximately \$36 million, \$48 million and \$102 million in 2019, 2018 and 2017, respectively, from options exercised.

Selected information regarding the Company's stock options as of December 31, 2019 is as follows:

Options Outstanding							Options Exercisable		
Number of Options	Exercise Price Range			Weighted Average Exercise Price	Weighted Average Remaining Life (in Years)	Number of Options	Weighted Average Exercise Price		
	\$	—	\$				\$	\$	
305,657	\$	8.34	—	\$ 8.34	\$ 8.34	305,657	\$	8.34	
319,740		11.46	—	24.59	17.81	319,740		17.81	
347,341		25.53	—	47.87	36.04	347,341		36.04	
335,343		50.79	—	64.67	60.76	281,443		60.01	
150,260	\$	64.86	—	\$ 64.93	\$ 64.92	150,260	\$	64.92	

The weighted average remaining contractual life of the options outstanding and exercisable as of December 31, 2019 is 2.9 years and 2.7 years, respectively. The total aggregate intrinsic value of the exercisable stock options and the stock options expected to vest as of December 31, 2019 was approximately \$174 million.

Stock Appreciation Rights – Stock Settled

The exercise price of the stock-settled SARs (“SSRs”) is equal to the closing market price of the Company’s common stock as of the grant date and expire on the tenth anniversary of the date of grant. The SSRs are eligible to vest either (i) in equal increments of 25% on each of the first four anniversaries of the date of grant or (ii) in three equal annual installments on each of the first three anniversaries of the date of grant.

The Company’s SSR activity in 2019 is as follows:

<u>(in millions, except number of SSRs and exercise price)</u>	<u>Number of SSRs</u>	<u>Weighted Average Exercise Price</u>	<u>Aggregate Intrinsic Value</u>
Outstanding at December 31, 2018	4,155,528	\$ 81.97	\$ 142
Granted	1,076,560	132.13	
Exercised	(723,433)	78.25	
Canceled	(193,783)	98.55	
Outstanding at December 31, 2019	<u>4,314,872</u>	<u>\$ 94.37</u>	<u>\$ 260</u>

The total intrinsic value of SSRs exercised was approximately \$47 million in 2019.

The weighted average remaining contractual life of the SSRs outstanding and exercisable as of December 31, 2019 is 7.6 years and 6.7 years, respectively. The total aggregate intrinsic value of the exercisable SSRs and the SSRs expected to vest as of December 31, 2019 was approximately \$256 million.

Stock Appreciation Rights – Cash Settled

The Company’s cash settled SARs (“CSRs”) require the Company to settle in cash an amount equal to the difference between the fair value of the Company’s common stock on the date of exercise and the grant price, multiplied by the number of CSRs being exercised. These awards vest either (i) 25% per year or (ii) 33% on the third anniversary of the date of grant and 67% on the fourth anniversary of the date of grant; or (iii) one-third per year beginning on the first anniversary of the date of grant.

The Company’s CSR activity in 2019 is as follows:

<u>(in millions, except number of CSRs and grant price)</u>	<u>Number of CSRs</u>	<u>Weighted Average Grant Price</u>	<u>Aggregate Intrinsic Value</u>
Outstanding at December 31, 2018	247,397	\$ 57.98	\$ 14
Granted	11,597	131.82	
Exercised	(76,885)	56.03	
Canceled	(10,269)	85.98	
Outstanding at December 31, 2019	<u>171,840</u>	<u>\$ 62.15</u>	<u>\$ 16</u>

As of December 31, 2019, 2018 and 2017, the weighted average fair value per share of the CSRs granted was \$99.27, \$66.92 and \$52.53, respectively. The Company paid approximately \$7 million, \$5 million and \$4 million to settle exercised CSRs in 2019, 2018 and 2017, respectively.

The weighted average remaining contractual life of the CSRs outstanding and exercisable as of December 31, 2019 is 5.1 years and 4.5 years, respectively. The total aggregate intrinsic value of the exercisable CSRs and the CSRs expected to vest as of December 31, 2019 was approximately \$16 million.

Restricted Stock Units – Stock Settled

The Company's RSUs will settle in shares of the Company's common stock within 45 days of the applicable vesting date. In general, RSUs granted to employees vest either (i) 25% per year beginning on the first anniversary of the date of grant; (ii) one-third per year beginning on the first anniversary of the grant date; (iii) 33% on the third anniversary of the date of grant and 67% on the fourth anniversary of the date of grant or (iv) 100% at the end of the three-year period following the grant date. Members of the Company's board of directors receive RSUs that are fully vested when granted.

The Company's RSU activity in 2019 is as follows:

	Number of RSUs	Weighted Average Grant-Date Fair Value
Outstanding at December 31, 2018	385,458	\$ 83.60
Granted ⁽¹⁾	262,630	133.59
Vested	(189,847)	76.28
Canceled	(37,675)	108.48
Outstanding at December 31, 2019	420,566	\$ 115.90

(1) Pursuant to the IQVIA Holdings Inc. Non-Employee Director Deferral Plan (the "Director Deferral Plan"), non-employee directors may elect to defer receipt of their cash retainers. If a director elects to defer his or her retainer, he or she will instead be credited with that value in deferred shares under the Director Deferral Plan. Deferred shares become payable in Company common stock following a termination of the director's Board service or the director's death, or upon a change in control of the Company. The Company granted 815 deferred RSUs in 2019.

As of December 31, 2019, there are 420,566 RSUs outstanding with an intrinsic value of approximately \$65 million.

Restricted Stock Units – Cash Settled

The Company's cash settled RSUs ("Cash RSUs") require the Company to settle in cash an amount equal to the fair value of the Company's common stock on the vest date multiplied by the number of vested Cash RSUs. These awards vest either (i) 100% at the end of the three-year period following the date of grant, or (ii) one-third per year beginning on the first grant date anniversary.

The Company's Cash RSU activity in 2019 is as follows:

	Number of Cash RSUs	Weighted Average Grant-Date Fair Value
Outstanding at December 31, 2018	13,361	\$ 96.70
Granted	13,085	131.82
Vested	(2,953)	78.21
Canceled	(2,786)	125.14
Outstanding at December 31, 2019	20,707	\$ 117.71

As of December 31, 2019, there are 20,707 Cash RSUs outstanding with an intrinsic value of approximately \$3.0 million.

Restricted Stock Awards

Restricted stock awards ("RSAs") vest either (i) in equal increments of 50% on each of the second and fourth anniversaries of the grant date; (ii) one-third per year beginning on the first anniversary of the date of grant; or (iii) 25% on each of the second and third anniversaries of the grant date and 50% on the fourth anniversary of the date of grant.

The Company's RSA activity in 2019 is as follows:

	Number of RSAs	Weighted Average Grant-Date Fair Value
Outstanding at December 31, 2018	436,067	\$ 79.04
Vested	(245,130)	79.68
Outstanding at December 31, 2019	190,937	\$ 78.21

As of December 31, 2019, there are 190,937 RSAs outstanding with an intrinsic value of approximately \$29.5 million.

Performance Awards

The Company awarded performance awards that contain service, performance-based and/or market-based vesting criteria. Vesting occurs if the recipient remains employed and depends on the degree to which performance goals are achieved during the two-year or three-year performance period (as defined in the award agreements).

The Company's performance award activity in 2019 is as follows:

	Number of Performance Awards	Weighted Average Grant-Date Fair Value
Outstanding at December 31, 2018	850,576	\$ 94.78
Granted	273,211	144.81
Canceled	(67,980)	103.75
Outstanding at December 31, 2019	<u>1,055,807</u>	<u>\$ 107.18</u>

As of December 31, 2019, there are 1,055,807 performance awards outstanding with an intrinsic value of approximately \$163 million.

Other

The Company sponsors a supplemental non-qualified deferred compensation plan, covering certain management employees, and maintains other statutory indemnity plans as required by local laws or regulations.

18. Related Party Transactions

The Company has entered into other transactions with related parties that are not deemed to be material, including investments in and advances to unconsolidated affiliates that are discussed in Note 4.

19. Property, Equipment and Software by Geography

The following table represents the Company's property, equipment and software, net, by geographic region, which is further broken down to show each country that accounts for 10% or more of the totals:

(in millions)	As of December 31,	
	2019	2018
Property, equipment and software, net:		
Americas:		
United States	\$ 1,130	\$ 856
Other	62	23
Americas	<u>1,192</u>	<u>879</u>
Europe and Africa	160	221
Asia-Pacific	61	70
Total property, equipment and software, net	<u>\$ 1,413</u>	<u>\$ 1,170</u>

20. Segments

The following table presents the Company's operations by reportable segment. The Company is managed through three reportable segments, Technology & Analytics Solutions, Research & Development Solutions and Contract Sales & Medical Solutions. Technology & Analytics Solutions provides mission critical information, technology solutions and real world solutions and services to the Company's life science clients. Research & Development Solutions, which primarily serves biopharmaceutical customers, provides outsourced clinical research and clinical trial related services. Contract Sales & Medical Solutions provides health care provider (including contract sales) and patient engagement services to both biopharmaceutical customers and the broader healthcare market. Prior period segment results have been recast to conform to immaterial changes to management reporting in 2017.

Certain costs are not allocated to our segments and are reported as general corporate and unallocated expenses. These costs primarily consist of stock-based compensation and expenses to integration activities and acquisitions. We also do not allocate depreciation and amortization or impairment charges to our segments. Prior period segment results have been recast to conform to changes to management reporting in 2019. The recast impacts the allocation of selling, general and administrative expenses for 2018 and 2017. Asset information by segment is not presented, as this measure is not used by the chief operating decision maker to assess the Company's performance.

(in millions)	Year Ended December 31,		
	2019	2018	2017
Revenues			
Technology & Analytics Solutions	\$ 4,486	\$ 4,137	\$ 3,682
Research & Development Solutions	5,788	5,465	5,105
Contract Sales & Medical Solutions	814	810	915
Total revenues	11,088	10,412	9,702
Costs of revenue			
Technology & Analytics Solutions	2,663	2,343	1,967
Research & Development Solutions	3,936	3,721	3,566
Contract Sales & Medical Solutions	701	682	768
Total costs of revenue	7,300	6,746	6,301
Selling, general and administrative expenses			
Technology & Analytics Solutions	722	753	717
Research & Development Solutions	711	689	678
Contract Sales & Medical Solutions	61	67	78
General corporate and unallocated	240	207	149
Total selling, general and administrative expenses	1,734	1,716	1,622
Segment profit			
Technology & Analytics Solutions	1,101	1,041	998
Research & Development Solutions	1,141	1,055	861
Contract Sales & Medical Solutions	52	61	69
Total segment profit	2,294	2,157	1,928
General corporate and unallocated	(240)	(207)	(149)
Depreciation and amortization	(1,202)	(1,141)	(1,011)
Impairment charges	—	0	(40)
Restructuring costs	(75)	(68)	(63)
Total income from operations	\$ 777	\$ 741	\$ 665

21. Earnings Per Share

The following table reconciles the basic to diluted weighted average shares outstanding:

(in millions)	Year Ended December 31,		
	2019	2018	2017
Basic weighted average common shares outstanding	195.1	203.7	217.8
Effect of dilutive stock options and share awards	4.5	4.5	4.8
Diluted weighted average common shares outstanding	199.6	208.2	222.6

The following table presents the weighted average number of outstanding stock-based awards not included in the computation of diluted earnings per share because they are subject to performance conditions or the effect of including such stock-based awards in the computation would be anti-dilutive:

(in millions)	Year Ended December 31,		
	2019	2018	2017
Shares subject to performance conditions	1.3	0.8	0.4
Shares subject to anti-dilutive stock-based awards	0.7	0.9	1.0
Total shares excluded from diluted earnings per share	2.0	1.7	1.4

The vesting of performance awards is contingent upon the achievement of certain performance targets. The performance awards are not included in diluted earnings per share until the performance targets are probable. Stock-based awards will have a dilutive effect under the treasury method when the respective period's average market value of the Company's common stock exceeds the exercise proceeds.

22. Comprehensive Income

Below is a summary of the components of AOCI:

(in millions)	Foreign Currency Translation	Derivative Instruments	Defined Benefit Plans	Income Taxes	Total
Balance at December 31, 2016	(617)	10	21	22	(564)
Other comprehensive income before reclassifications	403	5	8	197	613
Reclassification adjustments	—	(1)	1	—	—
Balance at December 31, 2017	(214)	14	30	219	49
Other comprehensive loss before reclassifications	(205)	(4)	(12)	(41)	(262)
Reclassification adjustments	—	(11)	1	(1)	(11)
Balance at December 31, 2018	(419)	(1)	19	177	(224)
Other comprehensive loss before reclassifications	(11)	(19)	(35)	(21)	(86)
Reclassification adjustments	—	(1)	—	—	(1)
Balance at December 31, 2019	\$ (430)	\$ (21)	\$ (16)	\$ 156	\$ (311)

Below is a summary of the adjustments for (gains) losses reclassified from AOCI into the consolidated statements of income and the affected financial statement line item:

(in millions)	Affected Financial Statement Line Item	Year Ended December 31,		
		2019	2018	2017
Derivative instruments:				
Interest rate swaps and caps	Interest expense	\$ —	\$ —	\$ —
Foreign exchange forward contracts	Revenues	5	1	7
Foreign exchange forward contracts	Other expense (income), net	(6)	(12)	(8)
Total before income taxes		(1)	(11)	(1)
Income tax expense		—	1	—
Total net of income taxes		<u>\$ (1)</u>	<u>\$ (12)</u>	<u>\$ (1)</u>
Defined benefit plans:				
Amortization of actuarial losses	See Note 17	\$ —	\$ 1	\$ 1
Income tax expense		—	—	—
Total net of income taxes		<u>\$ —</u>	<u>\$ 1</u>	<u>\$ 1</u>

23. Supplemental Cash Flow Information

The following table presents the Company's supplemental cash flow information:

(in millions)	Year Ended December 31,		
	2019	2018	2017
Supplemental Cash Flow Information:			
Interest paid	\$ 421	\$ 398	\$ 320
Income taxes paid, net of refunds	\$ 215	\$ 211	\$ 195

24. Quarterly Financial Data (Unaudited)

The following table summarizes the Company's unaudited quarterly results of operations:

(in millions, except per share data)	2019			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Revenues	\$ 2,684	\$ 2,740	\$ 2,769	\$ 2,895
Income from operations	210	197	204	166
Net income	67	71	69	20
Net income attributable to non-controlling interests	(9)	(11)	(12)	(4)
Net income attributable to IQVIA Holdings Inc.	<u>\$ 58</u>	<u>\$ 60</u>	<u>\$ 57</u>	<u>\$ 16</u>
Basic earnings per share ⁽²⁾	<u>\$ 0.29</u>	<u>\$ 0.31</u>	<u>\$ 0.29</u>	<u>\$ 0.09</u>
Diluted earnings per share ⁽²⁾	<u>\$ 0.29</u>	<u>\$ 0.30</u>	<u>\$ 0.29</u>	<u>\$ 0.09</u>
(in millions, except per share data)	2018			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Revenues	\$ 2,563	\$ 2,567	\$ 2,594	\$ 2,688
Income from operations	183	170	181	207
Net income	73	68	67	76
Net income attributable to non-controlling interests	(4)	(7)	(7)	(7)
Net income attributable to IQVIA Holdings Inc. ⁽¹⁾	<u>\$ 69</u>	<u>\$ 61</u>	<u>\$ 60</u>	<u>\$ 69</u>
Basic earnings per share ⁽²⁾	<u>\$ 0.33</u>	<u>\$ 0.30</u>	<u>\$ 0.30</u>	<u>\$ 0.34</u>
Diluted earnings per share ⁽²⁾	<u>\$ 0.32</u>	<u>\$ 0.29</u>	<u>\$ 0.29</u>	<u>\$ 0.34</u>

⁽¹⁾ During the fourth quarter of 2018, the Company identified and recorded certain adjustments related to prior periods and as a result increased pre-tax income by \$22 million (net income by \$15 million). The Company has evaluated the effects of the out of period adjustments and concluded they are not material to the fourth quarter 2018 financial results, nor to any of the previously issued annual or quarterly financial information.

⁽²⁾ The sum of the quarterly per share amounts may not equal per share amounts reported for year-to-date periods. This is due to changes in the number of weighted average shares outstanding and the effects of rounding for each period.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

As required by Rule 13a-15 under the Exchange Act, as amended, we carried out an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures under the supervision and with the participation of our management, including the Chief Executive Officer (“CEO”) and Chief Financial Officer (“CFO”). There are inherent limitations to the effectiveness of any system of disclosure controls and procedures, including the possibility of human error and the circumvention or overriding of the controls and procedures. Accordingly, even effective disclosure controls and procedures can only provide reasonable assurance of achieving their control objectives. Based upon our evaluation, our CEO and CFO concluded that our disclosure controls and procedures were effective to provide reasonable assurance that information required to be disclosed by us in the reports that we file or submit under the Exchange Act, as amended, is recorded, processed, summarized and reported within the time periods specified in the applicable rules and forms, and that it is accumulated and communicated to our management, including our CEO and CFO, as appropriate, to allow timely decisions regarding required disclosure.

Management’s Report on Internal Control over Financial Reporting

Our management’s report on internal control over financial reporting is set forth in Part II, Item 8 of this Annual Report on Form 10-K and is incorporated herein by reference.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting during the quarter ended December 31, 2019 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

On February 11, 2020, the Board of the Company amended the Company’s Amended and Restated Bylaws (the “Bylaws”) to implement a proxy access provision. The Bylaws include a new Section 1.3, which permits a stockholder, or a group of up to 20 stockholders, owning 3% or more of the Company’s outstanding common stock continuously for at least three years to nominate and include in the Company’s proxy materials director candidates constituting up to the greater of 2 nominees or 20% of the Board, subject to the terms and conditions set forth in the Bylaws.

The foregoing description of the amendments to the Bylaws does not purport to be complete and is qualified in its entirety by reference to the full text of the Bylaws, a copy of which is attached hereto as Exhibit 3.2 and is incorporated herein by reference.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Information required by this Item, other than the information regarding the executive officers of the Company set forth below, is incorporated by reference to the sections of our definitive Proxy Statement for our 2020 Annual Meeting of Stockholders (the “2020 Proxy Statement”) entitled “Proposal No. 1: Election of Directors”, “IQVIA’s Corporate Governance—Documents Establishing our Corporate Governance” and “IQVIA’s Corporate Governance—Committees of the Board.”

The current executive officers of the Company are as follows:

Name	Age	Position
Ari Bousbib	58	Chairman, Chief Executive Officer, and President
Michael R. McDonnell	56	Executive Vice President and Chief Financial Officer
W. Richard Staub, III	57	President, Research & Development Solutions
Kevin C. Knightly	59	President, Information & Technology Solutions
Eric Sherbet	55	Executive Vice President, General Counsel and Secretary

Ari Bousbib, Director, Chairman, Chief Executive Officer and President

Mr. Bousbib is Chairman, Chief Executive Officer and President of the Company. He assumed this position in October 2016 following the Merger of Quintiles and IMS Health. From 2010 until the Merger, Mr. Bousbib served as Chairman and CEO of IMS Health. Prior to joining IMS Health, Mr. Bousbib spent 14 years at United Technologies Corporation (“UTC”), an aerospace, defense and building systems company. From 2008 until 2010, he served as President of UTC’s Commercial Companies, with executive leadership responsibilities for the worldwide operations of Otis Elevator Company, Carrier Corporation, UTC Fire & Security and UTC Power Inc. From 2002 until 2008, Mr. Bousbib was President of Otis, and from 2000 to 2002, he served as its Chief Operating Officer. Prior to joining UTC, Mr. Bousbib was a partner at Booz Allen Hamilton. Mr. Bousbib currently serves on the board of directors of The Home Depot, Inc. and is a member of the Harvard Medical School Health Care Policy Advisory Council. Mr. Bousbib holds a Master of Science Degree in Mathematics and Mechanical Engineering from the Ecole Supérieure des Travaux Publics, Paris, and an M.B.A. from Columbia University.

Michael R. McDonnell, Executive Vice President and Chief Financial Officer

Mr. McDonnell has served as Executive Vice President and Chief Financial Officer since December 2015. Prior to joining the Company, Mr. McDonnell served as the Executive Vice President and Chief Financial Officer of Intelsat, a leading global provider of satellite services, from November 2008 to December 2015. He previously served as Executive Vice President and Chief Financial Officer of MCG Capital Corporation, a publicly-held commercial finance company, from September 2004 through October 2008 and as its Chief Operating Officer from August 2006 to October 2008. Before joining MCG Capital Corporation, Mr. McDonnell served as Executive Vice President and Chief Financial Officer for EchoStar Communications Corporation (f/k/a DISH Network Corporation), a direct-to-home satellite television operator, from July 2004 to August 2004 and as its Senior Vice President and Chief Financial Officer from August 2000 to July 2004. Mr. McDonnell spent 14 years at PricewaterhouseCoopers LLP, including four years as a partner. Mr. McDonnell has a Bachelor of Science degree in accounting from Georgetown University and is a certified public accountant.

W. Richard Staub, III, President, Research & Development Solutions

Mr. Staub has served as President, Research & Development Solutions since December 2016. Previously Mr. Staub served as President of Novella Clinical, a Quintiles company, since 2013. Prior to Novella’s 2013 acquisition by Quintiles, Mr. Staub served as both president and CEO of Novella Clinical since 2008. Before joining Novella Clinical in 2004, Mr. Staub was senior vice president of global business development for one of the world’s largest clinical research organizations. Mr. Staub’s career in the pharmaceutical industry began at Zeneca Pharmaceuticals in 1989 where he had progressive responsibilities as a medical and hospital sales representative, cardiovascular portfolio analyst and marketing manager. Mr. Staub has a Bachelor of Arts degree in Economics from the University of North Carolina at Chapel Hill.

Kevin C. Knightly, President, Information & Technology Solutions

Mr. Knightly has served as President, Information & Technology Solutions since October 2016. Previously Mr. Knightly served as Senior Vice President, Information Offerings at IMS Health from April 2015 to October 2016. From January 2011 to March 2015, Mr. Knightly served as Senior Vice President, Supplier Management at IMS Health. Prior to that, Mr. Knightly served in a number of senior financial, operations, marketing and general management roles for IMS Health, including as Senior Vice President, Pharma Business Management from 2007 until 2010. Mr. Knightly holds a B.S. in Economics and Accounting from the College of the Holy Cross, and an M.B.A. from New York University's Stern Business School.

Eric Sherbet, Executive Vice President, General Counsel and Secretary

Mr. Sherbet has served as our Executive Vice President, General Counsel and Secretary since March 2018. Prior to joining the Company, he served as General Counsel and Secretary at Patheon N.V. from November 2014 until November 2017. Prior to joining Patheon, he was General Counsel and Corporate Secretary at InVentiv Health from April 2011 until October 2014. He also previously served as Vice President, Deputy General Counsel and Corporate Secretary at Foster Wheeler AG and before that, as Vice President, Corporate and Securities Law and Secretary with Avaya, Inc. Mr. Sherbet earned his law degree from New York University School of Law and received his bachelor's degree in commerce/accounting from University of Virginia.

Item 11. Executive Compensation

Compensation

The information required by this item is set forth under the headings "Director Compensation," "Compensation Discussion and Analysis," "Compensation Committee Report," "Compensation of Named Executive Officers," and "Other Relevant Information—Compensation Committee Interlocks and Insider Participation" in the 2020 Proxy Statement and is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

Information in response to this Item, other than Securities Authorized for Issuance Under Equity Compensation Plans, will be set forth in the section entitled “Security Ownership of Certain Beneficial Owners and Management” in the Company’s 2020 Proxy Statement, which information is incorporated herein by reference.

Securities Authorized for Issuance Under Equity Compensation Plans

The following table provides certain information with respect to all of our equity compensation plans in effect as of December 31, 2019:

Equity Compensation Plan Information

Plan Category	Number of Securities to be issued Upon Exercise of Outstanding Options, Warrants and Rights (a)	Weighted Average Exercise Price of Outstanding Options, Warrants and Rights (b)	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders	7,172,397 ⁽¹⁾	\$ 79.35 ⁽³⁾	11,415,735 ⁽⁴⁾
Equity compensation plans not approved by security holders	26,727 ⁽²⁾	—	—
Total	7,199,124	\$ 79.35 ⁽³⁾	11,415,735

⁽¹⁾ Consists of: (i) 5,773,213 shares of common stock issuable upon the exercise of outstanding time-based stock options and underlying outstanding time-based SARs; (ii) 419,715 shares of common stock issuable in settlement of outstanding restricted stock units awarded and (ii) 979,433 shares of common stock issuable in settlement of outstanding performance units awarded. Excludes (i) 190,937 shares of common stock subject to outstanding awards of restricted stock and (ii) 76,374 shares of common stock subject to outstanding awards of performance stock.

⁽²⁾ Consists of outstanding awards issued to certain executives with supplemental pension benefits in accordance with their individual employment arrangements under the IMS Health DCERP.

⁽³⁾ The weighted-average exercise price includes all outstanding stock options and SARs but does not include restricted stock units, restricted stock, performance units or performance stock or IMS Health DCERP awards, all of which do not have an exercise price. If restricted stock units, performance units and other awards that constitute “rights” were included in this calculation, treating such awards as having an exercise price of \$0, the weighted average exercise price of outstanding options, warrants and rights would be \$63.87.

⁽⁴⁾ Consists of all securities remaining available under our equity compensation plans. All of these shares are available for delivery under stock options, SARs, restricted stock, restricted stock units, performance awards or other forms of equity award authorized by the plans. Does not include 2,251,704 shares that would have remained available under our Employee Stock Purchase Plan had it not been discontinued as of December 31, 2016.

Item 13. Certain Relationships and Related Transactions and Director Independence

The information required by this item is set forth under the headings “IQVIA’s Corporate Governance,” and “Certain Relationships and Related Party Transactions” in the 2020 Proxy Statement and is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services

The information required by this item is set forth under the headings “Audit—Fees Paid to Independent Registered Public Accounting Firm” in the 2020 Proxy Statement and is incorporated herein by reference.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a) The following documents are filed as part of this report:

(1) Financial Statements

The following consolidated financial statements of IQVIA Holdings Inc. and its subsidiaries, and the independent registered public accounting firm's report thereon, are included in Part II, Item 8 of this Annual Report:

	<u>Page</u>
Management's Report on Internal Control over Financial Reporting	55
Report of Independent Registered Public Accounting Firm	56
Consolidated Statements of Income	58
Consolidated Statements of Comprehensive (Loss) Income	59
Consolidated Balance Sheets	60
Consolidated Statements of Cash Flows	61
Consolidated Statements of Stockholders' Equity (Deficit)	62
Notes to Consolidated Financial Statements	63

(2) Financial Statement Schedules for the Years Ended December 31, 2019, 2018 and 2017

Schedule I—Condensed Financial Information of Registrant (Parent Company Only)	115
Schedule II—Valuation and Qualifying Accounts	120

All other schedules are omitted, since the required information is not applicable or is not present in amounts sufficient to require submission of the schedule, or because the information required is included in the consolidated financial statements and notes thereto.

(3) Exhibits

The exhibits in the accompanying Exhibit Index preceding the signature page are filed or furnished as a part of this report and are incorporated herein by reference. The Company agrees to furnish to the SEC, upon request, copies of any long-term debt instruments that authorize an amount of securities constituting 10% or less of the total assets of IQVIA Holdings Inc. and its subsidiaries on a consolidated basis.

EXHIBIT INDEX

Exhibit Number	Exhibit Description	Filed Herewith	Incorporated by Reference			
			Form	File No.	Exhibit	Filing Date
2.1*	Agreement and Plan of Merger, dated as of May 3, 2016, by and between Quintiles Transnational Holdings Inc. and IMS Health Holdings, Inc. (which includes the Plan of Conversion dated as of May 3, 2016 as Exhibit A thereto).		8-K	001-35907	2.1	May 3, 2016
3.1	Amended and Restated Certificate of Incorporation of IQVIA Holdings Inc., effective November 6, 2017 (as amended through November 6, 2017).		10-K	001-35907	3.1	February 16, 2018
3.2	Amended and Restated Bylaws of IQVIA Holdings Inc., effective February 11, 2020.	X				
4.1	Specimen Common Stock Certificate of Quintiles Transnational Holdings Inc.		S-1/A	333-186708	4.1	April 26, 2013
4.5	Indenture, dated as of September 28, 2016, among Quintiles IMS Incorporated, the Guarantors listed therein and U.S. Bank National Association, as Trustee.		8-K	001-35907	4.1	October 3, 2016
4.8	Indenture, dated February 28, 2017, among Quintiles IMS Incorporated, as Issuer, U.S. Bank National Association, as trustee of the Notes, and certain subsidiaries of the Issuer as guarantors.		8-K	001-35907	4.1	February 28, 2017
4.9	Indenture, dated September 14, 2017, among Quintiles IMS Incorporated, as Issuer, U.S. Bank National Association, as trustee of the Notes, and certain subsidiaries of the Issuer as guarantors.		8-K	001-35907	4.1	September 19, 2017
4.10	Indenture, dated May 10, 2019, among IQVIA Inc., as Issuer, U.S. Bank National Association, as trustee of the Notes and certain subsidiaries of the Issuer, as guarantors.		8-K	001-35907	4.1	May 10, 2019
4.11	Indenture, dated August 13, 2019, among IQVIA Inc., as Issuer, U.S. Bank National Association, as trustee of the Notes and certain subsidiaries of the Issuer, as guarantors.		8-K	001-35907	4.1	August 13, 2019
10.1	Fourth Amended and Restated Credit Agreement, dated as of October 3, 2016, by and among Quintiles IMS Incorporated, Quintiles IMS Holdings, Inc., the Guarantors party thereto and the Lenders party thereto (Annex B to Exhibit 10.9 filed October 3, 2016).		8-K	001-35907	10.9	October 3, 2016
10.2	Amendment No. 1, dated March 7, 2017, to Fourth Amended and Restated Credit Agreement, dated October 3, 2016, among Quintiles IMS Incorporated, Quintiles IMS Holdings, Inc., the Guarantors party thereto, Bank of America N.A., as administrative agent and collateral agent, the Incremental Term B-1 Euro Lenders party thereto and the other Lenders party thereto.		8-K	001-35907	10.1	March 8, 2017
10.3	Amendment No. 2, dated September 18, 2017, to Fourth Amended and Restated Credit Agreement, by and among Quintiles IMS Incorporated, Quintiles IMS Holdings, Inc., the Guarantors party thereto, Bank of America N.A., as administrative agent and collateral agent, the Incremental Term B-2 Dollar Lenders party thereto and the other Lenders party thereto.		8-K	001-35907	10.1	September 19, 2017
10.4	Amendment No. 3, dated April 6, 2018, to Fourth Amended and Restated Credit Agreement, dated October 3, 2016, by and among IQVIA Inc., IQVIA Holdings Inc., the other Borrowers party thereto, the other Guarantors party thereto, Bank of America, N.A., as administrative agent and collateral agent, and the Incremental Revolving Credit Lenders party thereto.		10-Q	001-35907	10.1	May 4, 2018
10.5	Amendment No. 4, dated June 11, 2018, to Fourth Amended and Restated Credit Agreement, dated October 3, 2016, among IQVIA Inc., IQVIA Holdings Inc., IQVIA AG, IQVIA Solutions Japan K.K., the other guarantors party thereto, Bank of America, N.A. as administrative agent and as collateral agent, the Lenders party thereto, the Incremental Term B-3 Dollar Lenders party thereto and the Incremental Term B-2 Euro Lenders party thereto.		8-K	001-35907	10.1	June 12, 2018
10.6	Amendment No. 5 to Fourth Amended and Restated Credit Agreement, dated August 9, 2019, among IQVIA Inc., IQVIA Holdings Inc., the other guarantors party thereto, Bank of America, N.A. as administrative agent and collateral agent, the Term B-1 Euro Lenders, the Term B-2 Euro Lenders and Goldman Sachs Bank USA, as Replacement Lender.		8-K	001-35907	10.1	August 13, 2019
10.7	Amendment No. 6 to Fourth Amended and Restated Credit Agreement, dated December 18, 2019, among IQVIA Inc., IQVIA Holdings Inc., the other		8-K	001-35907	10.1	December 18, 2019

Exhibit Number	Exhibit Description	Filed Herewith	Incorporated by Reference			
			Form	File No.	Exhibit	Filing Date
	guarantors party thereto, Bank of America, N.A. as administrative agent and collateral agent, the Term B-2 Dollar Lenders and Bank of America N.A., as Replacement Lender.					
10.8	Amended and Restated Pledge and Security Agreement, dated as of March 17, 2014, among Healthcare Technology Intermediate Holdings, Inc., IMS Health Incorporated, each of the grantors party thereto, and Bank of America, N.A., as Administrative Agent.		IMS Health S-1/A	333-193159	10.33	March 24, 2014
10.9	U.S. Guaranty, dated as of March 17, 2014, among Healthcare Technology Intermediate Holdings, Inc., as Holdings, IMS Health Incorporated, as Parent Borrower, the other Guarantors party thereto from time to time, and Bank of America, N.A., as Administrative Agent.		IMS Health S-1/A	333-193159	10.34	March 24, 2014
10.10	Stockholders Agreement, dated May 3, 2016, among Quintiles Transnational Holdings Inc. and the stockholders identified therein.		8-K	001-35907	10.4	May 3, 2016
10.11†	Form of Director Indemnification Agreement.		S-1/A	333-186708	10.13	April 19, 2013
10.12	Form of Indemnification Agreement with each of the non-management directors of Quintiles IMS Holdings Inc.		8-K	001-35907	10.8	October 3, 2016
10.13†	Description of Non-Employee Director Compensation, effective as of January 1, 2017.		10-K	001-35907	10.27	February 16, 2017
10.14†	Form of Non-Competition, Non-Solicitation, Confidentiality and IP Agreement.		8-K	001-35907	10.2	October 19, 2015
10.15†	Quintiles Transnational Holdings Inc. Annual Management Incentive Plan.		S-1/A	333-186708	10.57	April 19, 2013
10.16†	Quintiles Transnational Holdings Inc. 2008 Stock Incentive Plan.		S-1	333-186708	10.17	February 15, 2013
10.17†	Form of Stock Option Award Agreement for Senior Executives under the Quintiles Transnational Holdings Inc. 2008 Stock Incentive Plan.		S-1	333-186708	10.18	February 15, 2013
10.18†	Form of Stock Option Award Agreement for Non-Employee Directors under the Quintiles Transnational Holdings Inc. 2008 Stock Incentive Plan.		S-1	333-186708	10.19	February 15, 2013
10.19†	Quintiles Transnational Holdings Inc. 2013 Stock Incentive Plan.		S-1/A	333-186708	10.22	April 19, 2013
10.20†	Form of Award Agreement Awarding Nonqualified Stock Options to Employees under the Quintiles Transnational Holdings Inc. 2013 Stock Incentive Plan.		S-1/A	333-186708	10.23	April 19, 2013
10.21†	Form of Award Agreement Awarding Incentive Stock Options to Employees under the Quintiles Transnational Holdings Inc. 2013 Stock Incentive Plan.		10-Q	001-35907	10.2	May 1, 2014
10.22†	Form of Award Agreement Awarding Nonqualified Stock Options to Non-Employee Directors under the Quintiles Transnational Holdings Inc. 2013 Stock Incentive Plan.		S-1/A	333-186708	10.24	April 19, 2013
10.23†	Form of Award Agreement Awarding Stock Appreciation Rights under the Quintiles Transnational Holdings Inc. 2013 Stock Incentive Plan.		S-1/A	333-186708	10.56	April 19, 2013
10.24†	Form of Award Agreement Awarding Stock Appreciation Rights under the Quintiles IMS Holdings, Inc. 2013 Stock Incentive Plan effective February 2017.		10-K	001-35907	10.41	February 16, 2017
10.25†	Form of Award Agreement Awarding Restricted Stock Units under the Quintiles Transnational Holdings Inc. 2013 Stock Incentive Plan prior to February 2015.		8-K	001-35907	10.1	November 26, 2013
10.26†	Form of Award Agreement Awarding Restricted Stock Units under the Quintiles Transnational Holdings Inc. 2013 Stock Incentive Plan effective February 2015.		10-K	001-35907	10.34	February 12, 2015
10.27†	Form of Award Agreement Awarding Performance Units under the Quintiles Transnational Holdings Inc. 2013 Stock Incentive Plan.		10-K	001-35907	10.35	February 12, 2015
10.28†	Form of Award Agreement Awarding Performance Shares under the Quintiles IMS Holdings, Inc. 2013 Stock Incentive Plan effective February 2017.		10-K	001-35907	10.45	February 16, 2017
10.29†	Form of Restricted Stock Award Agreement under the Quintiles Transnational Holdings Inc. 2013 Stock Incentive Plan.		10-Q	001-35907	10.3	November 3, 2016

Exhibit Number	Exhibit Description	Filed Herewith	Incorporated by Reference			
			Form	File No.	Exhibit	Filing Date
10.30†	Form of Award Agreement Awarding Restricted Stock Units under the Quintiles IMS Holdings, Inc. 2013 Stock Incentive Plan effective February 2017.		10-K	001-35907	10.47	February 16, 2017
10.31†	Quintiles IMS Holdings, Inc. Defined Contribution Executive Retirement Plan.		8-K	001-35907	10.7	October 3, 2016
10.32†	IMS Health Incorporated Defined Contribution Executive Retirement Plan, as amended and restated.		IMS Health S-1	333-193159	10.10	January 2, 2014
10.33†	First Amendment to the IMS Health Incorporated Retirement Excess Plan, dated March 17, 2009.		IMS Health S-1	333-193159	10.12	January 2, 2014
10.34†	Second Amendment to the IMS Health Incorporated Retirement Excess Plan, dated December 8, 2009.		IMS Health S-1	333-193159	10.13	January 2, 2014
10.35†	Third Amendment to the IMS Health Incorporated Retirement Excess Plan, dated April 5, 2011.		IMS Health S-1	333-193159	10.14	January 2, 2014
10.36†	Fourth Amendment to the IMS Health Incorporated Retirement Excess Plan (effective May 3, 2016).		IMS Health 10-Q	001-36381	10.3	July 28, 2016
10.37†	Quintiles IMS Holdings, Inc. 2010 Equity Incentive Plan.		8-K	001-35907	10.5	October 3, 2016
10.38†	Healthcare Technology Holdings, Inc. 2010 Equity Incentive Plan, as amended and restated.		IMS Health S-1/A	333-193159	10.16	February 13, 2014
10.39†	Form of IMS Time-and Performance-Based Stock Option Award Agreement under the 2010 Equity Incentive Plan.		IMS Health S-1	333-193159	10.17	January 2, 2014
10.40†	Form of IMS Time-Based Stock Option Award Agreement under the 2010 Equity Incentive Plan.		IMS Health S-1	333-193159	10.18	January 2, 2014
10.41†	Form of IMS Director Stock Option Award Agreement under the 2010 Equity Incentive Plan.		IMS Health S-1	333-193159	10.19	January 2, 2014
10.42†	Form of IMS Restricted Stock Unit Award Agreement under the 2010 Equity Incentive Plan.		IMS Health S-1	333-193159	10.20	January 2, 2014
10.43†	Form of IMS Director Restricted Stock Unit Award Agreement under the 2010 Equity Incentive Plan.		IMS Health S-1	333-193159	10.21	January 2, 2014
10.44†	Form of IMS Rollover Stock Appreciation Right Award Agreement under the 2010 Equity Incentive Plan.		IMS Health S-1	333-193159	10.22	January 2, 2014
10.45†	IMS Health Incorporated Savings Equalization Plan, as amended and restated effective as of January 1, 2011.		IMS Health S-1	333-193159	10.15	January 2, 2014
10.46†	Quintiles IMS Holdings, Inc. 2014 Incentive and Stock Award Plan.		8-K	001-35907	10.6	October 3, 2016
10.47†	Form of IMS Stock Appreciation Rights Agreement under the 2014 Incentive and Stock Award Plan.		IMS Health 8-K	001-36381	10.1	February 10, 2015
10.48†	Form of IMS Performance Share Award Agreement under the 2014 Incentive and Stock Award Plan.		IMS Health 8-K	001-36381	10.2	February 10, 2015
10.49†	2014 IMS Health Annual Incentive Plan.		IMS Health S-1/A	333-193159	10.30	March 10, 2014

Exhibit Number	Exhibit Description	Filed Herewith	Incorporated by Reference			
			Form	File No.	Exhibit	Filing Date
10.50†	Quintiles IMS Holdings, Inc. 2017 Incentive and Stock Award Plan.		DEF 14A	001-35907	Appendix B	February 22, 2017
10.51†	Form of Award Agreement Awarding Stock Appreciation Rights under the Quintiles IMS Holdings, Inc. 2017 Incentive and Stock Award Plan effective April 2017.		10-Q	001-35907	10.8	May 8, 2017
10.52†	Form of Award Agreement Awarding Performance Shares under the Quintiles IMS Holdings, Inc. 2017 Incentive and Stock Award Plan effective April 2017.		10-Q	001-35907	10.9	May 8, 2017
10.53†	Form of Award Agreement Awarding Restricted Stock Units under the Quintiles IMS Holdings, Inc. 2017 Incentive and Stock Award Plan effective April 2017.		10-Q	001-35907	10.10	May 8, 2017
10.54†	Quintiles IMS Incorporated Employee Protection Plan, effective January 1, 2017.		10-K	001-35907	10.69	February 16, 2017
10.55†	Quintiles IMS Incorporated Savings Equalization Plan, effective December 31, 2016.		10-K	001-35907	10.76	February 16, 2017
10.56†	Quintiles Transnational Corp. Elective Deferred Compensation Plan, as amended and restated.		10-Q	001-35907	10.1	October 28, 2015
10.57†	Quintiles IMS Holdings Inc. Non-Employee Director Deferral Plan, effective January 1, 2017.		10-K	001-35907	10.78	February 16, 2017
10.58†	Amended and Restated Employment Agreement between IQVIA Holdings Inc. and Ari Bousbib, dated February 18, 2019.		10-K	001-35907	10.60	February 19, 2019
10.59†	Senior Management Nonstatutory Option Agreement between Healthcare Technology Holdings, Inc. and Ari Bousbib, dated December 1, 2010.		IMS Health S-1/A	333-193159	10.23	February 13, 2014
10.60†	Senior Management Nonstatutory Option Agreement between Healthcare Technology Holdings, Inc. and Ari Bousbib, dated December 1, 2010.		IMS Health S-1/A	333-193159	10.24	February 13, 2014
10.61†	Stock Appreciation Rights Agreement between IMS Health Holdings, Inc. and Ari Bousbib, dated February 10, 2015.		IMS Health 10-K	001-36381	10.34	February 19, 2016
10.62†	Amendment No. 1, dated December 31, 2015, to Stock Appreciation Rights Agreement between IMS Health Holdings, Inc. and Ari Bousbib dated February 10, 2015.		IMS Health 10-K	001-36381	10.35	February 19, 2016
10.63†	Restricted Stock Award Agreement between IMS Health Holdings, Inc. and Ari Bousbib dated December 31, 2015.		IMS Health 10-K	001-36381	10.36	February 19, 2016
10.64†	Letter Agreement, dated October 14, 2015, between Michael McDonnell and Quintiles Transnational Corp.		8-K	001-35907	10.3	October 19, 2015
10.65†	Letter agreement between the Company and Michael R. McDonnell effective on October 3, 2016.		8-K	001-35907	10.1	October 3, 2016
10.66†	Letter Agreement between the Company and W. Richard Staub, III, effective on December 1, 2016.		10-K	001-35907	10.104	February 16, 2017
10.67†	Letter Agreement between the Company and Eric Sherbet, effective on March 1, 2018.		10-K	001-35907	10.72	February 19, 2019
21.1	List of Subsidiaries of IQVIA Holdings Inc.	X				
23.1	Consent of PricewaterhouseCoopers LLP.	X				
31.1	Certification of Chief Executive Officer, pursuant to Rule 13a-14(a)/15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	X				
31.2	Certification of Executive Vice President and Chief Financial Officer, pursuant to Rule 13a-14(a)/15d-14(a), as adopted pursuant to Section 302 of the	X				

Exhibit Number	Exhibit Description	Filed Herewith	Incorporated by Reference			
			Form	File No.	Exhibit	Filing Date
	Sarbanes-Oxley Act of 2002.					
32.1	Certification of Chief Executive Officer, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.	X				
32.2	Certification of Executive Vice President and Chief Financial Officer, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.	X				
101	Interactive Data Files Pursuant to Rule 405 of Regulation S-T: (i) Consolidated Statements of Income, (ii) Consolidated Statements of Comprehensive Income, (iii) Consolidated Balance Sheets, (iv) Consolidated Statements of Cash Flows, (v) Notes to Consolidated Financial Statements and (vi) Notes to Consolidated Financial Statements. The instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.	X				
104	Cover Page Interactive Data File. The instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.	X				

† Indicates management contract or compensatory plan or arrangement.

* The Merger Agreement and the description thereof included herein have been included to provide investors and stockholders with information regarding the terms of the agreement. They are not intended to provide any other factual information about Quintiles or IMS Health or their respective subsidiaries or affiliates or stockholders. The representations, warranties and covenants contained in the Merger Agreement were made only for purposes of the Merger Agreement as of the specific dates therein, were solely for the benefit of the parties to the Merger Agreement, may be subject to limitations agreed upon by the contracting parties, including being qualified by confidential disclosures made for the purposes of allocating contractual risk among the parties to the Merger Agreement instead of establishing these matters as facts, and may be subject to standards of materiality applicable to the contracting parties that differ from those applicable to investors. Investors should not rely on the representations, warranties and covenants or any descriptions thereof as characterizations of the actual state of facts or condition of the parties thereto or any of their respective subsidiaries or affiliates. Moreover, information concerning the subject matter of representations and warranties may change after the date of the Merger Agreement, which subsequent information may or may not be fully reflected in public disclosures by Quintiles or IMS Health. Accordingly, investors should read the representations and warranties in the Merger Agreement not in isolation but only in conjunction with the other information about Quintiles or IMS Health and their respective subsidiaries that the respective companies include in reports, statements and other filings they make with the United States Securities and Exchange Commission.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

IQVIA HOLDINGS INC.

By: /s/ Michael R. McDonnell
Name: Michael R. McDonnell
Title: Executive Vice President and Chief
Financial Officer

Date: February 18, 2020

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Ari Bousbib</u> Ari Bousbib	Chairman, and Chief Executive Officer; Director (Principal Executive Officer)	February 18, 2020
<u>/s/ Michael R. McDonnell</u> Michael R. McDonnell	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	February 18, 2020
<u>/s/ Emmanuel Korakis</u> Emmanuel Korakis	Senior Vice President, Corporate Controller (Principal Accounting Officer)	February 18, 2020
<u>/s/ Carol J. Burt</u> Carol J. Burt	Director	February 18, 2020
<u>/s/ John P. Connaughton</u> John P. Connaughton	Director	February 18, 2020
<u>/s/ Jonathan J. Coslet</u> Jonathan J. Coslet	Director	February 18, 2020
<u>/s/ John G. Danhaki</u> John G. Danhaki	Director	February 18, 2020
<u>/s/ Michael J. Evanisko</u> Michael J. Evanisko	Director	February 18, 2020
<u>/s/ James A. Fasano</u> James A. Fasano	Director	February 18, 2020
<u>/s/ Colleen A. Goggins</u> Colleen A. Goggins	Director	February 18, 2020
<u>/s/ John M. Leonard, M.D.</u> John M. Leonard, M.D.	Director	February 18, 2020
<u>/s/ Ronald A. Rittenmeyer</u> Ronald A. Rittenmeyer	Director	February 18, 2020
<u>/s/ Todd B. Sisitsky</u> Todd B. Sisitsky	Director	February 18, 2020

(2) Financial Statement Schedules

Schedule I—Condensed Financial Information of Registrant

IQVIA HOLDINGS INC. (PARENT COMPANY ONLY)
CONDENSED STATEMENTS OF INCOME

(in millions)	Year Ended December 31,		
	2019	2018	2017
Selling, general and administrative expenses	\$ —	\$ 2	\$ 1
Merger related costs	—	—	—
Loss from operations	—	(2)	(1)
Interest income	—	—	—
Other expense, net	—	—	—
Loss before income taxes and equity in earnings of subsidiary	—	(2)	(1)
Income tax benefit	—	(1)	(3)
(Loss) income before equity in earnings of subsidiary	—	(1)	2
Equity in earnings of subsidiary	191	260	1,275
Net income	\$ 191	\$ 259	\$ 1,277

IQVIA HOLDINGS INC. (PARENT COMPANY ONLY)
CONDENSED STATEMENTS OF COMPREHENSIVE (LOSS) INCOME

(in millions)	Year Ended December 31,		
	2019	2018	2017
Net income	\$ 191	\$ 259	\$ 1,277
Comprehensive (loss) income adjustments:			
Unrealized (losses) gains on derivative instruments, net of income tax expense (benefit) of \$4, (\$5) and \$1	(15)	1	4
Defined benefit plan adjustments, net of income tax (benefit) expense of \$5, (\$4) and \$3	(30)	(8)	5
Foreign currency translation, net of income tax (benefit) expense of (\$30), \$50 and (\$201)	(41)	(255)	604
Reclassification adjustments:			
(Gains) losses on derivative instruments included in net income, net of income tax expense of \$—, \$1 and \$—	(1)	(12)	(1)
Amortization of actuarial losses and prior service costs included in net income	—	1	1
Comprehensive (loss) income	\$ 104	\$ (14)	\$ 1,890

IQVIA HOLDINGS INC. (PARENT COMPANY ONLY)
CONDENSED BALANCE SHEETS

(in millions, except per share data)	December 31,	
	2019	2018
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 3	\$ 1
Income taxes receivable	—	—
Other current assets and receivables	—	—
Total current assets	3	1
Investment in subsidiary	9,667	9,667
Receivable from parent company	—	—
Total assets	\$ 9,670	\$ 9,668
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ —	\$ —
Income taxes payable	—	—
Total current liabilities	—	—
Investment in subsidiary	3,664	2,954
Payable to subsidiary	3	—
Total liabilities	3,667	2,954
Commitments and contingencies		
Stockholders' equity:		
Common stock and additional paid-in capital, 400.0 shares authorized at December 31, 2019 and 2018, \$0.01 par value, 253.0 shares issued and 192.3 shares outstanding at December 31, 2019; 251.5 shares issued and 197.5 shares outstanding at December 31, 2018	11,049	10,901
Retained earnings	998	807
Treasury stock, at cost, 60.7 and 54.0 shares at December 31, 2019 and 2018, respectively	(5,733)	(4,770)
Accumulated other comprehensive (loss) income	(311)	(224)
Total stockholders' equity	6,003	6,714
Total liabilities and stockholders' equity	\$ 9,670	\$ 9,668

IQVIA HOLDINGS INC. (PARENT COMPANY ONLY)
CONDENSED STATEMENTS OF CASH FLOWS

(in millions)	Year Ended December 31,		
	2019	2018	2017
Operating activities:			
Net income	\$ 191	\$ 259	\$ 1,277
Adjustments to reconcile net income to cash provided by operating activities:			
Subsidiary loss	—	143	91
Change in operating assets and liabilities:			
Accounts payable and accrued expenses	—	2	(3)
Income taxes payable and other liabilities	—	—	4
Net cash provided by operating activities	<u>191</u>	<u>404</u>	<u>1,369</u>
Investing activities:			
Investment in subsidiary, net of dividends received	<u>760</u>	<u>983</u>	<u>1,182</u>
Net cash provided by investing activities	<u>760</u>	<u>983</u>	<u>1,182</u>
Financing activities:			
Proceeds related to employee stock purchase and option plans	—	15	91
Issuance of common stock	11	—	—
Repurchase of common stock	(963)	(1,405)	(2,620)
Intercompany with subsidiary	3	3	(31)
Net cash used in financing activities	<u>(949)</u>	<u>(1,387)</u>	<u>(2,560)</u>
Effect of foreign currency exchange rate changes on cash	—	—	(2)
(Decrease) increase in cash and cash equivalents	<u>2</u>	<u>—</u>	<u>(11)</u>
Cash and cash equivalents at beginning of period	<u>1</u>	<u>1</u>	<u>12</u>
Cash and cash equivalents at end of period	<u>\$ 3</u>	<u>\$ 1</u>	<u>\$ 1</u>

IQVIA HOLDINGS INC. (PARENT COMPANY ONLY)
NOTES TO CONDENSED FINANCIAL INFORMATION

The condensed parent company financial statements have been prepared in accordance with Rule 12-04, Schedule I of Regulation S-X as the restricted net assets of IQVIA Holdings Inc.'s (the "Company") wholly-owned subsidiary, IQVIA Incorporated exceed 25% of the consolidated net assets of the Company. The ability of IQVIA Incorporated to pay dividends may be limited due to the restrictive covenants in the agreements governing its credit arrangements.

These condensed parent company financial statements include the accounts of IQVIA Holdings Inc. on a standalone basis (the "Parent") and the equity method of accounting is used to reflect ownership interest in its subsidiary. Refer to the consolidated financial statements and notes presented elsewhere herein for additional information and disclosures with respect to these financial statements.

Since the Parent is part of a group that files a consolidated income tax return, in accordance with ASC 740, a portion of the consolidated amount of current and deferred income tax expense of the Company has been allocated to the Parent. The income tax benefit of \$0 million, \$1 million and \$3 million in 2019, 2018 and 2017, respectively, represents the income tax benefit that will be or were already utilized in the Company's consolidated United States federal and state income tax returns. If the Parent was not part of these consolidated income tax returns, it would not be able to recognize any income tax benefit, as it generates no revenue against which the losses could be used on a separate filer basis.

Below is a summary of the dividends paid to the Parent by IQVIA Incorporated in 2019, 2018 and 2017:

(in millions)	Amount
Paid in December 2019	\$ 13
Paid in November 2019	255
Paid in September 2019	74
Paid in August 2019	239
Paid in June 2019	94
Paid in May 2019	140
Paid in March 2019	141
Paid in February 2019	3
Total paid in 2019	\$ 959
Paid in December 2018	\$ 339
Paid in November 2018	146
Paid in October 2018	132
Paid in September 2018	118
Paid in June 2018	414
Paid in May 2018	154
Paid in March 2018	54
Paid in February 2018	37
Total paid in 2018	\$ 1,394
Paid in December 2017	\$ 22
Paid in November 2017	362
Paid in September 2017	373
Paid in August 2017	168
Paid in May 2017	356
Paid in March 2017	1,237
Paid in February 2017	45
Paid in January 2017	3
Total paid in 2017	\$ 2,566

Schedule II—Valuation and Qualifying Accounts

Deferred Tax Asset Valuation Allowance

(in millions)	Balance at Beginning of Year	Additions			Additions (Deductions) ^(b)	Balance at End of Year
		Charged to Expenses	Charged to Other Accounts ^(a)			
December 31, 2019	\$ 226	\$ 40	\$ —	\$ —	\$ 266	
December 31, 2018	\$ 200	\$ 23	\$ —	\$ 3	\$ 226	
December 31, 2017	\$ 153	\$ 52	\$ —	\$ (5)	\$ 200	

^(a) Recorded through purchase accounting transaction.

^(b) Impact of reductions recorded to expense and translation adjustments.

AMENDED AND RESTATED BYLAWS
OF
IQVIA HOLDINGS INC.

SECTION 1 – STOCKHOLDERS

Section 1.1. Annual Meeting.

An annual meeting of the stockholders of IQVIA Holdings Inc., a Delaware corporation (the “Corporation”), for the election of directors to succeed those whose terms expire and for the transaction of such other business as may properly come before the meeting shall be held at the place, if any, within or without the State of Delaware, on the date and at the time that the Board of Directors of the Corporation (the “Board of Directors”) shall each year fix. Unless stated otherwise in the notice of the annual meeting of the stockholders of the Corporation, such annual meeting shall be at the principal office of the Corporation.

Section 1.2. Advance Notice of Nominations and Proposals of Business.

(a) Nominations of persons for election to the Board of Directors and proposals for other business to be transacted by the stockholders at an annual meeting of stockholders may be made (i) pursuant to the Corporation’s notice with respect to such meeting (or any supplement thereto), (ii) by or at the direction of the Board of Directors or any committee thereof or (iii) by any stockholder of record of the Corporation who (A) was a stockholder of record at the time of the giving of the notice contemplated in Section 1.2(b), (B) is entitled to vote at such meeting and (C) has complied with the notice procedures set forth in this Section 1.2. Subject to Section 1.2(i) and except as otherwise required by law, clause (iii) of this Section 1.2(a) and Section 1.3 shall be the exclusive means for a stockholder to make nominations or propose other business (other than nominations and proposals properly brought pursuant to applicable provisions of federal law, including the Securities Exchange Act of 1934 (as amended from time to time, the “Act”) and the rules and regulations of the Securities and Exchange Commission thereunder) before an annual meeting of stockholders.

(b) Except as otherwise required by law, for nominations or proposals to be properly brought before an annual meeting by a stockholder pursuant to clause (iii) of Section 1.2(a), (i) the stockholder must have given timely notice thereof in writing to the Secretary of the Corporation with the information contemplated by Section 1.2(c) including, where applicable, delivery to the Corporation of timely and completed questionnaires as contemplated by Section 1.2(c), and (ii) the business must be a proper matter for stockholder action under the General Corporation Law of the State of Delaware (the “DGCL”). The notice requirements of this Section 1.2 shall be deemed satisfied by a stockholder with respect to business other than a nomination if the stockholder has notified the Corporation of his, her or its intention to present a proposal at an annual meeting in compliance with applicable rules and regulations promulgated under the Act and such stockholder’s proposal has been included in a proxy statement prepared by the Corporation to solicit proxies for such annual meeting.

(c) To be timely for purposes of Section 1.2(b), a stockholder's notice must be delivered to the Secretary of the Corporation at the principal executive offices of the Corporation on a date (i) not later than the close of business on the 90th day nor earlier than the close of business on the 120th day prior to the anniversary date of the prior year's annual meeting or (ii) if there was no annual meeting in the prior year or if the date of the current year's annual meeting is more than 30 days before or more than 60 days after the anniversary date of the prior year's annual meeting, not earlier than the close of business on the 120th day prior to such annual meeting and not later than the close of business on the later of (x) the 90th day prior to such annual meeting or (y) 10 days after the day on which the date of the current year's annual meeting is first disclosed in a public announcement. In no event shall any adjournment or postponement of an annual meeting or the announcement thereof commence a new time period (or extend any time period) for the delivery of such notice. Such notice from a stockholder must state (i) as to each nominee that the stockholder proposes for election or reelection as a director, (A) all information relating to such nominee that would be required to be disclosed in solicitations of proxies for the election of such nominee as a director pursuant to Regulation 14A under the Act, including such person's written consent to being named in the proxy statement as a nominee and serving as a director if elected, and (B) a description of all direct and indirect compensation and other material monetary arrangements, agreements or understandings during the past three years, and any other material relationship, if any, between or concerning such stockholder, any Stockholder Associated Person (as defined below) or any of their respective affiliates or associates, on the one hand, and the proposed nominee or any of his or her affiliates or associates, on the other hand; (ii) as to each proposal that the stockholder seeks to bring before the meeting, a brief description of such proposal, the reasons for making the proposal at the meeting, the text of the proposal or business (including the text of any resolutions proposed for consideration and in the event that such business includes a proposal to amend the bylaws of the Corporation, the language of the proposed amendment) and any material interest that the stockholder has in the proposal; and (iii) (A) the name and address of the stockholder giving the notice and the Stockholder Associated Persons, if any, on whose behalf the nomination or proposal is made, (B) the class (and, if applicable, series) and number of shares of stock of the Corporation that are, directly or indirectly, owned beneficially or of record by the stockholder or any Stockholder Associated Person, (C) any option, warrant, convertible security, stock appreciation right or similar right with an exercise or conversion privilege or a settlement payment or mechanism at a price related to any class (or, if applicable, series) of shares of stock of the Corporation or with a value derived in whole or in part from the value of any class (or, if applicable, series) of shares of stock of the Corporation, whether or not such instrument or right shall be subject to settlement in the underlying class or series of capital stock of the Corporation or otherwise (each, a "Derivative Instrument") directly or indirectly owned beneficially or of record by such stockholder or any Stockholder Associated Person and any other direct or indirect opportunity to profit or share in any profit derived from any increase or decrease in the value of shares of stock of the Corporation of the stockholder or any Stockholder Associated Person, (D) any proxy, contract, arrangement, understanding or relationship pursuant to which such stockholder or any Stockholder Associated Person has a right to vote any securities of the Corporation, (E) any proportionate interest in shares of the Corporation or Derivative Instruments held, directly or indirectly, by a general or limited partnership in which such stockholder or any Stockholder Associated Person is a general partner or beneficially owns, directly or indirectly, an interest in a general partner, (F) any performance-related fees (other

than an asset-based fee) that such stockholder or any Stockholder Associated Person is entitled to based on any increase or decrease in the value of the shares of stock of the Corporation or Derivative Instruments, (G) any other information relating to such stockholder or any Stockholder Associated Person, if any, required to be disclosed in a proxy statement or other filing required to be made in connection with solicitations of proxies for, as applicable, the proposal and/or for the election of directors in an election contest pursuant to and in accordance with Section 14(a) of the Act and the rules and regulations of the Securities and Exchange Commission thereunder, (H) a representation that the stockholder is a holder of record of the Corporation entitled to vote at such meeting and intends to appear in person or by proxy at the meeting to propose such business or nomination, (I) a certification as to whether or not the stockholder and all Stockholder Associated Persons, have complied with all applicable federal, state and other legal requirements in connection with the stockholder's and each Stockholder Associated Person's acquisition of shares of capital stock or other securities of the Corporation and the stockholder's and each Stockholder Associated Person's acts or omissions as a stockholder (or beneficial owner of securities) of the Corporation, and (J) whether either the stockholder intends to deliver a proxy statement and form of proxy to holders of, in the case of a proposal, at least the percentage of the Corporation's voting shares required under applicable law to carry the proposal or, in the case of a nomination or nominations, a sufficient number of holders of the Corporation's voting shares reasonably believed by such stockholder to be sufficient to elect such nominee or nominees or otherwise to solicit proxies or votes from stockholders in support of such proposal or nomination. For purposes of these bylaws, a "Stockholder Associated Person" of any stockholder means (i) any "affiliate" or "associate" (as those terms are defined in Rule 12b-2 under the Act) of such stockholder, (ii) any beneficial owner of any capital stock or other securities of the Corporation owned of record or beneficially by such stockholder, (iii) any person directly or indirectly controlling, controlled by or under common control with any such Stockholder Associated Person referred to in clause (i) or (ii) above, and (iv) any person acting in concert in respect of any matter involving the Corporation or its securities with either such stockholder or any beneficial owner of any capital stock or other securities of the Corporation owned of record or beneficially by such stockholder. In addition, in order for a nomination to be properly brought before an annual or special meeting by a stockholder pursuant to clause (iii) of Section 1.2(a), subject to Section 1.2(i), any nominee proposed by a stockholder shall complete a questionnaire, in a form provided by the Corporation, and deliver a signed copy of such completed questionnaire to the Corporation within 10 days of the date that the Corporation makes available to the stockholder seeking to make such nomination or such nominee the form of such questionnaire and shall deliver a written and signed statement that such person (i) is not and will not become a party to (A) any agreement, arrangement or understanding with, and has not given any commitment or assurance to, any person or entity as to how such person, if elected as a director of the Corporation, will act or vote on any issue or question (a "Voting Commitment") that has not been disclosed to the Corporation or (B) any Voting Commitment that could limit or interfere with such person's ability to comply, if elected as a director of the Corporation, with such person's fiduciary duties under applicable law, (ii) is not and will not become a party to any agreement, arrangement or understanding with any person or entity other than the Corporation with respect to any direct or indirect compensation, reimbursement or indemnification in connection with service or action as a director of the Corporation that has not been disclosed in the notice required by this Section 1.2, and (iii) in such person's individual capacity and on behalf of any person, entity or

group on whose behalf the nomination is being made, would be in compliance, if elected as a director of the Corporation, and will comply with all applicable publicly disclosed codes of ethics and conduct, corporate governance, conflict of interest, confidentiality and stock ownership and trading policies and guidelines of the Corporation. The Corporation may require any proposed nominee to furnish such other information as may be reasonably requested by the Corporation to determine the eligibility of the proposed nominee to serve as an independent director of the Corporation or that could be material to a reasonable stockholder's understanding of the independence, or lack thereof, of the nominee. The information required to be included in a notice pursuant to this Section 1.2(c) shall be provided as of the date of such notice and shall be supplemented by the stockholder not later than 10 days after the record date for the determination of stockholders entitled to notice of the meeting to disclose any changes to such information as of the record date. If any of the facts set forth in any notice provided pursuant to this Section 1.2(c) changes between the date that such notice is sent and the date of the annual meeting to which such notice pertains, the stockholder must deliver to the Secretary of the Corporation at the principal executive offices of the Corporation, by the earlier of (i) the close of business on the date that is five days after the event giving rise to such change, or (ii) the commencement of such annual meeting, a supplemental notice providing such revised information. The information required to be included in a notice pursuant to this Section 1.2(c) shall not include any ordinary course business activities of any broker, dealer, commercial bank, trust company or other nominee who is directed to prepare and submit the notice required by this Section 1.2(c) on behalf of a beneficial owner of the shares held of record by such broker, dealer, commercial bank, trust company or other nominee and who is not otherwise affiliated or associated with such beneficial owner. For purposes of these bylaws, "beneficial ownership" shall be determined in accordance with Rule 13d-3 promulgated under the Act.

(d) Subject to the certificate of incorporation of the Corporation (the "Certificate of Incorporation"), Section 1.2(i) and applicable law, only persons nominated in accordance with procedures stated in this Section 1.2 or Section 1.3 shall be eligible for election as and to serve as members of the Board of Directors and the only business that shall be conducted at an annual meeting of stockholders is the business that has been brought before the meeting in accordance with the procedures set forth in this Section 1.2. The chairman of the meeting shall have the power and the duty to determine whether a nomination or any proposal has been made according to the procedures stated in this Section 1.2 and, if any nomination or proposal does not comply with this Section 1.2, unless otherwise required by law, the nomination or proposal shall be disregarded.

(e) For purposes of this Section 1.2, "public announcement" means disclosure in a press release reported by the Dow Jones News Service, Associated Press or a comparable news service or in a document publicly filed or furnished by the Corporation with the Securities and Exchange Commission pursuant to Section 13, 14 or 15(d) of the Act.

(f) Notwithstanding the foregoing provisions of this Section 1.2, a stockholder shall also comply with applicable requirements of the Act and the rules and regulations thereunder with respect to matters set forth in this Section 1.2. Nothing in this Section 1.2 shall affect any rights, if any, of stockholders to request inclusion of nominations or proposals in the Corporation's proxy statement pursuant to applicable provisions of federal law, including the Act.

(g) Notwithstanding the foregoing provisions of this Section 1.2, unless otherwise required by law, if the stockholder (or a qualified representative of the stockholder) does not appear at the annual or special meeting of stockholders of the Corporation to present a nomination or proposed business or does not provide the information required by Section 1.2 (c), including any required supplement thereto, such nomination shall be disregarded and such proposed business shall not be transacted, notwithstanding that proxies in respect of such vote may have been received by the Corporation. For purposes of this Section 1.2, to be considered a qualified representative of the stockholder, a person must be a duly authorized officer, manager or partner of such stockholder or must be authorized by a writing executed by such stockholder or an electronic transmission delivered by such stockholder to act for such stockholder as proxy at the meeting of stockholders and such person must produce such writing or electronic transmission, or a reliable reproduction of the writing or electronic transmission, at the meeting of stockholders.

(h) Only such business shall be conducted at a special meeting of stockholders as shall have been brought before the meeting pursuant to the Corporation's notice of meeting. Nominations of persons for election to the Board of Directors may be made at a special meeting of stockholders at which directors are to be elected pursuant to the Corporation's notice of meeting (1) by or at the direction of the Board of Directors or any committee thereof or (2) provided that the Board of Directors has determined that directors shall be elected at such meeting, by any stockholder of the Corporation who is a stockholder of record at the time the notice provided for in this Section 1.2 is delivered to the Secretary of the Corporation, who is entitled to vote at the meeting upon such election and who complies with the notice procedures set forth in this Section 1.2. In the event the Corporation calls a special meeting of stockholders for the purpose of electing one or more directors to the Board of Directors, any such stockholder entitled to vote in such election of directors may nominate a person or persons (as the case may be) for election to such position(s) as specified in the Corporation's notice of meeting, if the stockholder's notice required by paragraph (b) of this Section 1.2 shall be delivered to the Secretary of the Corporation at the principal executive offices of the Corporation not earlier than the close of business on the 120th day prior to such special meeting and not later than the close of business on the later of (x) the 90th day prior to such special meeting or (y) the 10th day following the day on which public announcement is first made of the date of the special meeting and of the nominees proposed by the Board of Directors to be elected at such meeting. In no event shall the public announcement of an adjournment or postponement of a special meeting commence a new time period (or extend any time period) for the giving of a stockholder's notice as described above.

(i) All provisions of this Section 1.2 are subject to, and nothing in this Section 1.2 shall in any way limit the exercise, or the method or timing of the exercise of, the rights of any person granted by the Corporation to nominate directors, including without limitation, such rights contained in the Stockholders Agreement, which rights may be exercised without compliance with the provisions of this Section 1.2. For purposes of these bylaws, "Stockholders Agreement" has the meaning ascribed to it in the Certificate of Incorporation.

Section 1.3. Proxy Access for Director Nominations.

(a) Whenever the Board of Directors solicits proxies with respect to the election of directors at an annual meeting of stockholders, subject to the provisions of this Section 1.3, the Corporation shall include in its proxy statement, on its form proxy and on any ballot distributed at such annual meeting, in addition to any persons nominated for election by the Board of Directors or any committee thereof, the name, together (in the case of the proxy statement) with the Required Information (defined below), of any person nominated for election (the “Stockholder Nominee”) to the Board of Directors by a stockholder or group of no more than 20 stockholders that satisfies the requirements of this Section 1.3 (such stockholder or stockholder group, including each member thereof to the extent the context requires, the “Eligible Stockholder”), and who expressly elects at the time of providing the notice required by this Section 1.3 (the “Notice of Proxy Access Nomination”) to have its nominee included in the Corporation’s proxy materials pursuant to this Section 1.3. For purposes of this Section 1.3, in calculating the number of stockholders in a group seeking to qualify as an Eligible Stockholder, two or more funds that are (i) under common management and investment control, (ii) under common management and funded primarily by the same employer, or (iii) a “group of investment companies” as such term is defined in Section 12(d)(1)(G)(ii) of the Investment Company Act of 1940, as amended, shall be counted as one stockholder. In the event that the Eligible Stockholder consists of a group of stockholders, any and all requirements and obligations for an individual Eligible Stockholder that are set forth in these bylaws, including the Minimum Holding Period, shall apply to each member of such group; provided, however, that the Required Ownership Percentage shall apply to the ownership of the group in the aggregate. For purposes of this Section 1.3, the “Required Information” that the Corporation will include in its proxy statement is the information provided to the Secretary of the Corporation concerning the Stockholder Nominee and the Eligible Stockholder that is required to be disclosed in the Corporation’s proxy statement by the regulations promulgated under the Act, and if the Eligible Stockholder so elects, a written statement of the Eligible Stockholder (or, in the case of a group, a written statement of the group), not to exceed 500 words, in support of the candidacy of such Stockholder Nominee (the “Statement”). Notwithstanding anything to the contrary contained in this Section 1.3, the Corporation may omit from its proxy materials any information or Statement (or portion thereof) that it, in good faith, believes is untrue in any material respect (or omits to state a material fact necessary in order to make the statements made, in the light of the circumstances under which they are made, not misleading) or would violate any applicable law or regulation, and the Corporation may solicit against, and include in the proxy statement its own statement relating to, any Stockholder Nominee.

(b) To be timely, the Notice of Proxy Access Nomination must be delivered to the Secretary of the Corporation at the principal executive offices of the Corporation on a date that is (i) no earlier than the close of business on the 150th day and (ii) no later than the close of business on the 120th day prior to the anniversary of the date that the Corporation issued its proxy statement for the previous year’s annual meeting of stockholders; provided, however, that if there was no annual meeting in the prior year or if the date of the current year’s annual meeting is more than 30 days before or more than 60 days after the anniversary date of the prior year’s annual meeting, notice by the Proposing Stockholder to be timely must be so delivered not earlier than the close of business on the 120th day prior to such annual meeting and not later than the close of business on the later of (x) the 90th day prior to such annual meeting or (y) 10 days

after the date of the current year's annual meeting is first disclosed in a public announcement. In no event shall any adjournment or postponement of an annual meeting or the announcement thereof commence a new time period (or extend any time period) for the delivery of the Notice of Proxy Access Nomination.

(c) The maximum number of Stockholder Nominees nominated by all Eligible Stockholders that will be included in the Corporation's proxy materials with respect to an annual meeting of stockholders shall not exceed the greater of (i) two and (ii) 20% of the total number of directors in office (rounded down to the nearest whole number) as of the last day on which a Notice of Proxy Access Nomination may be delivered pursuant to and in accordance with this Section 1.3 (the "Final Proxy Access Nomination Date"). In the event that one or more vacancies for any reason occurs after the Final Proxy Access Nomination Date but before the date of the annual meeting and the Board of Directors resolves to reduce the size of the Board of Directors in connection therewith, the maximum number of Stockholder Nominees included in the Corporation's proxy materials shall be calculated based on the number of directors in office as so reduced. The following individuals shall be counted as one of the Stockholder Nominees for purposes of determining when the maximum number of Stockholder Nominees provided for in this Section 1.3 has been reached: (i) any individual nominated by an Eligible Stockholder for inclusion in the Corporation's proxy materials pursuant to this Section 1.3 whom the Board of Directors decides to nominate as a nominee of the Board of Directors, (ii) any director in office as of the Final Proxy Access Nomination Date who was included in the Corporation's proxy materials as a Stockholder Nominee pursuant to this Section 1.3 for any of the two preceding annual meetings of stockholders (including any individual counted as a Stockholder Nominee pursuant to the preceding clause (i)) and whom the Board of Directors decides to nominate for re-election to the Board of Directors, (iii) any nominee recommended by the Board of Directors who will be included in the Corporation's proxy materials pursuant to an agreement, arrangement or other understanding with a stockholder or group of stockholders (other than any such agreement, arrangement or understanding entered into in connection with an acquisition of stock from the Corporation by such stockholder or group of stockholders) and (iv) any individual nominated by an Eligible Stockholder for inclusion in the Corporation's proxy materials pursuant to this Section 1.3 but whose nomination is subsequently withdrawn. Any Eligible Stockholder submitting more than one Stockholder Nominee for inclusion in the Corporation's proxy materials pursuant to this Section 1.3 shall rank such Stockholder Nominees based on the order that the Eligible Stockholder desires such Stockholder Nominees to be selected for inclusion in the Corporation's proxy statement in the event that the total number of Stockholder Nominees submitted by Eligible Stockholders pursuant to this Section 1.3 exceeds the maximum number of nominees provided for in this Section 1.3. In the event that the number of Stockholder Nominees submitted by Eligible Stockholders pursuant to this Section 1.3 exceeds the maximum number of nominees provided for in this Section 1.3, the highest ranking Stockholder Nominee who meets the requirements of this Section 1.3 from each Eligible Stockholder will be selected for inclusion in the Corporation's proxy materials until the maximum number is reached, going in order of the amount (largest to smallest) of shares of the Corporation's outstanding common stock each Eligible Stockholder disclosed as owned in its respective Notice of Proxy Access Nomination submitted to the Corporation. If the maximum number is not reached after the highest ranking Stockholder Nominee who meets the requirements of this Section 1.3 from each Eligible Stockholder has been selected, this process will continue as many times as necessary, following the same order each time, until the maximum number is reached. Following such determination,

if any Stockholder Nominee who satisfies the eligibility requirements of this Section 1.3 (y) thereafter is nominated by the Board of Directors or (z) thereafter is not included in the Corporation's proxy materials or is not submitted for election as a director (in either case in this clause (z), as a result of the Nominating Stockholder becoming ineligible or withdrawing its nomination, the Stockholder Nominee becoming unwilling or unable to serve on the Board of Directors or the Eligible Stockholder or the Stockholder Nominee failing to comply with the provisions of this Section 1.3), no other nominee or nominees shall be included in the Corporation's proxy materials or otherwise submitted for director election in substitution thereof.

(d) For purposes of this Section 1.3, an Eligible Stockholder shall be deemed to "own" only those outstanding shares of common stock of the Corporation as to which the stockholder possesses both:

- (i) the full voting and investment rights pertaining to the shares; and
- (ii) the full economic interest in (including the opportunity for profit from and risk of loss on) such shares;

provided that the number of shares calculated in accordance with clauses (i) and (ii) shall not include any shares:

(A) sold by such stockholder or any of its affiliates in any transaction that has not been settled or closed, including any short sale;

(B) borrowed by such stockholder or any of its affiliates for any purposes or purchased by such stockholder or any of its affiliates pursuant to an agreement to resell; or

(C) subject to any option, warrant, forward contract, swap, contract of sale, other derivative or similar agreement entered into by such stockholder or any of its affiliates, whether any such instrument or agreement is to be settled with shares or with cash based on the notional amount or value of shares of outstanding common stock of the Corporation, in any such case which instrument or agreement has, or is intended to have, or if exercised by either party would have, the purpose or effect of:

- (1) reducing in any manner, to any extent or at any time in the future, such stockholder's or its affiliates' full right to vote or direct the voting of any such shares; and/or
- (2) hedging, offsetting or altering to any degree any gain or loss realized or realizable from maintaining the full economic ownership of such shares by such stockholder or its affiliates.

A stockholder shall "own" shares held in the name of a nominee or other intermediary so long as the stockholder retains the right to instruct how the shares are voted with respect to the election of directors and possesses the full economic interest in the shares. A stockholder's ownership of shares shall be deemed to continue during any period in

which the stockholder has delegated any voting power by means of a proxy, power of attorney or other instrument or arrangement which is revocable at any time by the stockholder. A stockholder's ownership of shares shall be deemed to continue during any period in which the stockholder has loaned such shares provided that the stockholder (i) has the power to recall such loaned shares on five (5) business days' notice, (ii) recalls such loaned shares within five (5) business days' notice of being notified that its Stockholder Nominee will be included in the Corporation's proxy materials for the applicable annual meeting and (iii) holds such loaned shares through the date of the applicable annual meeting. The terms "owned," "owning" and other variations of the word "own" shall have correlative meanings. Whether outstanding shares of the common stock of the Corporation are "owned" for these purposes shall be determined by the Board of Directors or any committee thereof. For purposes of this Section 1.3, the term "affiliate" or "affiliates" shall have the meaning ascribed thereto under the rules and regulations under the Act. An Eligible Stockholder shall include in its Notice of Proxy Access Nomination the number of shares it is deemed to own for the purposes of this Section 1.3.

(e) In order to make a nomination pursuant to this Section 1.3, an Eligible Stockholder must have owned (as defined above) the Required Ownership Percentage (as defined below) of the Corporation's outstanding common stock (the "Required Shares") continuously for the Minimum Holding Period (as defined below) as of both the date the Notice of Proxy Access Nomination is delivered to the Secretary of the Corporation in accordance with this Section 1.3 and the record date for determining the stockholders entitled to vote at the annual meeting and must continue to own the Required Shares through the meeting date. For purposes of this Section 1.3, the "Required Ownership Percentage" shall be at least 3% or more of the Corporation's outstanding common stock as of the most recent date for which such amount is given in any filing by the Corporation with the Securities and Exchange Commission prior to the submission of the Notice of Proxy Access Nomination. For purposes of this Section 1.3, the "Minimum Holding Period" shall be at least 3 years. Within the time period specified in this Section 1.3 for delivering the Notice of Proxy Access Nomination, an Eligible Stockholder must provide the following information in writing to the Secretary of the Corporation:

(i) one or more written statements from the record holder of the shares (and from each intermediary through which the shares are or have been held during the Minimum Holding Period) verifying that, as of a date within seven calendar days prior to the date the Notice of Proxy Access Nomination is delivered to Secretary of the Corporation, the Eligible Stockholder owns, and has owned continuously for the Minimum Holding Period, the Required Shares, and the Eligible Stockholder's agreement to provide, within five business days after (A) the record date for the annual meeting (if, prior to the record date, the Corporation (1) has made a public announcement of such record date or (2) delivered a written notice of the record date (including by electronic mail) to the Eligible Stockholder) or (B) the date on which the Corporation delivered to the Eligible Stockholder written notice (including by electronic mail) of the record date (if such notice is provided after the record date), written statements from the record holder and intermediaries verifying the Eligible Stockholder's continuous ownership of the Required Shares through the record date;

(ii) a copy of the Schedule 14N that has been filed with the SEC as required by Rule 14a-18 under the Act;

(iii) the information, representations and agreements that are the same as those that would be required to be set forth in a stockholder's notice of nomination pursuant to Section 1.2(c) of these bylaws;

(iv) the consent of each Stockholder Nominee to being named in the proxy statement as a nominee and to serving as a director if elected;

(v) a representation and agreement that the Eligible Stockholder:

(A) acquired the Required Shares in the ordinary course of business and not with the intent to change or influence control at the Corporation, and does not at present have such intent;

(B) at present intends to maintain qualifying ownership of the Required Shares through the date of the annual meeting;

(C) has not nominated and will not nominate for election any individual as a director at the annual meeting, other than its Stockholder Nominee(s);

(D) has not engaged and will not engage in, and has not and will not be a "participant" in another person's, "solicitation" within the meaning of Rule 14a-1(l) under the Act in support of the election of any individual as a director at the annual meeting, other than its Stockholder Nominee(s) or a nominee of the Board of Directors;

(E) agrees to comply with all applicable laws and regulations with respect to any solicitation in connection with the meeting or applicable to the filing and use, if any, of soliciting material;

(F) will provide facts, statements and other information in all communications with the Corporation and its stockholders that are or will be true and correct in all material respects and do not and will not omit to state a material fact necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading; and

(G) as to any two or more funds whose shares are aggregated to count as one stockholder for the purpose of constituting an Eligible Stockholder, within five business days after the date of the Notice of Proxy Access Nomination, will provide to the Corporation documentation reasonably satisfactory to the Corporation that demonstrates that the funds satisfy the requirements of the second sentence of subsection (a) of this Section 1.3;

(vi) an undertaking that the Eligible Stockholder agrees to:

(A) assume all liability stemming from any legal or regulatory violation arising out of the Eligible Stockholder's communications with the stockholders of the Corporation or out of the information that the Eligible Stockholder provided to the Corporation;

(B) indemnify and hold harmless the Corporation and each of its directors, officers and employees individually against any liability, loss or damages in connection with any threatened or pending action, suit or proceeding, whether legal, administrative or investigative, against the Corporation or any of its directors, officers or employees arising out of the Eligible Stockholder's efforts to elect a Stockholder Nominee pursuant to this Section 1.3; and

(C) file with the SEC any solicitation made to the Corporation's stockholders relating to the meeting at which the Stockholder Nominee will be nominated, regardless of whether any such filing is required under Regulation 14A of the Act or whether any exemption from filing is available thereunder; and

(vii) in the case of a nomination by a group of stockholders that together is an Eligible Stockholder, the designation by all group members of one group member that is authorized to act on behalf of all such members with respect to the nomination and matters related thereto, including withdrawal of the nomination.

(f) Within the time period specified in this Section 1.3 for delivering the Notice of Proxy Access Nomination, a Stockholder Nominee must deliver to the Secretary of the Corporation (which shall be deemed to be part of the Notice of Proxy Access Nomination for purposes of this Section 1.3):

(i) the information required with respect to persons whom a stockholder proposes to nominate for election or reelection as a director by Section 1.2(c) of these bylaws;

(ii) a written representation and agreement that such person:

(A) will act as a representative of all of the stockholders of the Corporation while serving as a director;

(B) is not and will not become a party to (I) a Voting Commitment that has not been disclosed to the Corporation or (II) any Voting Commitment that could limit or interfere with such Stockholder Nominee's ability to comply, if elected as a director of the Corporation, with such Stockholder Nominee's fiduciary duties under applicable law;

(C) is not or will not become a party to any agreement, arrangement or understanding with any person or entity other than the Corporation with respect to direct or indirect compensation, reimbursement or indemnification in connection with service or nomination as a director that has not been disclosed to the Corporation in the notice required by this Section 1.3;

(D) will comply with all applicable publicly disclosed codes of ethics and conduct, corporate governance, conflict of interest, confidentiality and stock ownership and trading policies and guidelines of the Corporation, as well as the applicable provisions of these bylaws; and

(E) will provide facts, statements and other information in all communications with the Corporation and its stockholders that are or will be true and correct in all material respects (and shall not omit to state a material fact necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading).

At the request of the Corporation, the Stockholder Nominee(s) must promptly complete, sign and submit all questionnaires required of directors and officers of the Corporation. The Corporation may request such additional information as necessary to permit the Board of Directors to determine if each Stockholder Nominee satisfies the requirements of this Section 1.3 or if each Stockholder Nominee is independent under the listing standards of the principal U.S. exchange upon which the common stock of the Corporation is listed, any applicable rules of the SEC and any publicly disclosed standards used by the Board of Directors in determining and disclosing the independence of the Corporation's directors.

(g) In the event that any information or communications provided by the Eligible Stockholder or the Stockholder Nominee to the Corporation or its stockholders ceases to be true and correct in all material respects or omits a material fact necessary to make the statements made, in the light of the circumstances under which they were made, not misleading, each Eligible Stockholder or Stockholder Nominee, as the case may be, shall promptly notify the Secretary of the Corporation of any defect in such previously provided information and of the information that is required to correct any such defect, it being understood that providing any such notification shall not be deemed to cure any defect or limit the Corporation's rights to omit a Stockholder Nominee from its proxy materials as provided in this Section 1.3.

(h) The Corporation shall not be required to include, pursuant to this Section 1.3, a Stockholder Nominee in its proxy materials for any meeting of stockholders, any such nomination shall be disregarded and no vote on such Stockholder Nominee will occur, notwithstanding that proxies in respect of such vote may have been received by the Corporation:

(i) if the Secretary of the Corporation receives a notice (whether or not subsequently withdrawn) that a stockholder proposes to nominate any person for election to the Board of Directors pursuant to the advance notice requirements for stockholder nominees for director set forth in Section 1.2 of these bylaws;

(ii) if the Eligible Stockholder who has nominated such Stockholder Nominee has nominated for election to the Board of Directors at the meeting any person other than pursuant to this Section 1.3, or has or is engaged in, or has been or is a "participant" in another person's, "solicitation" within the meaning of Rule 14a-1(l) under the Act in support of the election of any individual as a director at the meeting (other than its Stockholder Nominee(s) or a nominee of the Board of Directors);

(iii) who is not independent under the listing standards of the principal U.S. exchange upon which the common stock of the Corporation is listed, any applicable rules of the SEC and any publicly disclosed standards used by the Board of Directors in determining and disclosing independence of the Corporation's directors, in each case as determined by the Board of Directors;

(iv) who does not meet the audit committee independence requirements under the listing standards of the principal U.S. exchange upon which the common stock of the Corporation is listed or any applicable rules of the SEC;

(v) who does not satisfy the requirements for service on the Board of Directors set forth in the Corporation's Corporate Governance Guidelines;

(vi) whose election as a member of the Board of Directors would cause the Corporation to be in violation of these bylaws, the Certificate of Incorporation, the rules and listing standards of the principal U.S. exchange upon which the common stock of the Corporation is listed, or any applicable state or federal law, rule or regulation;

(vii) who is or has been, within the past three years, an officer or director of a competitor, as defined for purposes of Section 8 of the Clayton Antitrust Act of 1914;

(viii) who is a named subject of a pending criminal proceeding (excluding traffic violations and other minor offenses) or has been convicted in such a criminal proceeding within the past ten (10) years;

(ix) who is subject to any order of the type specified in Rule 506(d) of Regulation D promulgated under the Securities Act of 1933, as amended;

(x) if such Stockholder Nominee or the applicable Eligible Stockholder shall have provided information to the Corporation in connection with such nomination that was untrue in any material respect or omitted to state a material fact necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading, as determined by the Board of Directors or any committee thereof; or

(xi) the Eligible Stockholder or applicable Stockholder Nominee breaches or fails to comply with the requirements of or its obligations pursuant to these bylaws, including, but not limited to, this Section 1.3 and any agreement, representation or undertaking required by this Section 1.3.

(i) Notwithstanding anything to the contrary set forth herein, the Board of Directors or the chairperson of the meeting of stockholders shall declare a nomination to be invalid, and such nomination shall be disregarded notwithstanding that proxies in respect of such vote may have been received by the Corporation, if:

(i) the Stockholder Nominee(s) and/or the applicable Eligible Stockholder shall have breached the requirements of or its or their obligations under this Section 1.3, as determined by the Board of Directors or the chairperson of the meeting of stockholders; or

(ii) the Eligible Stockholder (or a qualified representative thereof) does not appear at the meeting of stockholders to present any nomination pursuant to this Section 1.3.

(j) Any Stockholder Nominee who is included in the Corporation's proxy materials for a particular annual meeting of stockholders but (A) withdraws from or becomes ineligible or unavailable for election at the annual meeting or (B) does not receive at least 20% of the votes cast in favor of his or her election will be ineligible to be a Stockholder Nominee pursuant to this Section 1.3 for the next two annual meetings. For the avoidance of doubt, this Section 1.3(j) shall not prevent any stockholder from nominating any person to the Board of Directors pursuant to and in accordance with Section 1.2 of these bylaws.

(k) No stockholder shall be permitted to join more than one group of stockholders to become an Eligible Stockholder for purposes of nominations pursuant to this Section 1.3 per each annual meeting of stockholders.

(l) This Section 1.3 shall be the exclusive method for stockholders to include nominees for director in the Corporation's proxy materials

Section 1.4. Special Meetings; Notice.

Special meetings of the stockholders of the Corporation may be called only in the manner set forth in the Certificate of Incorporation. Notice of every special meeting of the stockholders of the Corporation shall state the purpose or purposes of such meeting. Except as otherwise required by law, the business conducted at a special meeting of stockholders of the Corporation shall be limited exclusively to the business set forth in the Corporation's notice of meeting, and the individual or group calling such meeting shall have exclusive authority to determine the business included in such notice.

Section 1.5. Notice of Meetings.

Notice of the place, if any, date and time of all meetings of stockholders of the Corporation, the record date for determining the stockholders entitled to vote at the meeting (if such date is different from the record date for stockholders entitled to notice of the meeting) and the means of remote communications, if any, by which stockholders and proxy holders may be deemed present and vote at such meeting, and, in the case of all special meetings of stockholders, the purpose or purposes of the meeting, shall be given, not less than 10 nor more than 60 days before the date on which such meeting is to be held, to each stockholder entitled to notice of the meeting.

The Corporation may postpone or cancel any previously called annual or special meeting of stockholders of the Corporation by making a public announcement (as defined in Section 1.2(e)) of such postponement or cancellation prior to the meeting. When a previously called annual or special meeting is postponed to another time, date or place, if any, notice of the place (if any), date and time of the postponed meeting, the record date for determining the stockholders entitled to vote at the meeting (if such date is different from the record date for stockholders entitled to notice of the meeting) and the means of remote communications, if any, by which stockholders and proxy holders may be deemed present and vote at such postponed meeting, shall be given in

conformity with this Section 1.5 unless such meeting is postponed to a date that is not more than 60 days after the date that the initial notice of the meeting was provided in conformity with this Section 1.5 .

When a meeting is adjourned to another time or place, notice need not be given of the adjourned meeting if the time and place, if any, thereof and the means of remote communication, if any, by which stockholders and proxy holders may be deemed to be present and vote at such adjourned meeting are announced at the meeting at which the adjournment is taken; provided , however , that if the adjournment is for more than 30 days, a notice of the adjourned meeting shall be given to each stockholder of record entitled to vote at the meeting, or if after the adjournment a new record date for stockholders entitled to vote is fixed for the adjourned meeting the Board of Directors shall fix a new record date for notice of such adjourned meeting in conformity herewith and such notice shall be given to each stockholder of record entitled to vote at such adjourned meeting as of the record date for notice of such adjourned meeting. At any adjourned meeting, any business may be transacted that may have been transacted at the original meeting.

Section 1.6. Quorum.

At any meeting of the stockholders, the holders of shares of stock of the Corporation entitled to cast a majority of the total votes entitled to be cast by the holders of all outstanding shares of capital stock of the Corporation entitled to vote generally in the election of directors (“Voting Stock”), present in person or by proxy, shall constitute a quorum for all purposes, unless or except to the extent that the presence of a larger number is required by applicable law or the Certificate of Incorporation. If a separate vote by one or more classes or series is required, the holders of shares entitled to cast a majority of the total votes entitled to be cast by the holders of the shares of the class or classes or series, present in person or represented by proxy, shall constitute a quorum entitled to take action with respect to that vote on that matter.

If a quorum shall fail to attend any meeting, the chairman of the meeting may adjourn the meeting to another place, if any, date and time.

Section 1.7. Organization.

The Chairman of the Board or, in his or her absence, the Vice Chairman of the Board, or, in his or her absence, the person whom the Board of Directors designates or, in the absence of that person or the failure of the Board of Directors to designate a person, the President of the Corporation or, in his or her absence, the person chosen by the holders of a majority of the shares of capital stock entitled to vote who are present, in person or by proxy, shall call to order any meeting of the stockholders of the Corporation and act as chairman of the meeting. In the absence of the Secretary or any Assistant Secretary of the Corporation, the secretary of the meeting shall be the person the chairman appoints.

Section 1.8. Conduct of Business.

The chairman of any meeting of stockholders of the Corporation shall determine the order of business and the rules of procedure for the conduct of such meeting, including the manner of voting and the conduct of discussion as he or she determines to be in order. The chairman shall have the power to adjourn the meeting to another place, if any, date and time. The date and time

of the opening and closing of the polls for each matter upon which the stockholders will vote at the meeting shall be announced at the meeting. Except to the extent inconsistent with such rules and regulations as adopted by the Board of Directors, the chairman of the meeting shall have the right and authority to convene and (for any or no reason) to adjourn the meeting, to prescribe such rules, regulations and procedures and to do all such acts as, in the judgment of such chairman, are appropriate for the proper conduct of the meeting. Such rules, regulations or procedures, whether adopted by the Board of Directors or prescribed by the chairman of the meeting, may include, without limitation, the following: (i) the establishment of an agenda or order of business for the meeting; (ii) rules and procedures for maintaining order at the meeting and the safety of those present; (iii) limitations on attendance at or participation in the meeting to stockholders entitled to vote at the meeting, their duly authorized and constituted proxies or such other persons as the chairman of the meeting shall determine; (iv) restrictions on entry to the meeting after the time fixed for the commencement thereof; and (v) limitations on the time allotted to questions or comments by participants. The chairman of the meeting of stockholders, in addition to making any other determinations that may be appropriate to the conduct of the meeting, shall, if the facts warrant, determine and declare to the meeting that a nomination or matter of business was not properly brought before the meeting and if such chairman should so determine, such chairman shall so declare to the meeting and any such matter or business not properly brought before the meeting shall not be transacted or considered. Unless and to the extent determined by the Board of Directors or the chairman of the meeting, meetings of stockholders shall not be required to be held in accordance with the rules of parliamentary procedure.

Section 1.9. Proxies; Inspectors.

(a) At any meeting of the stockholders, every stockholder entitled to vote may vote in person or by proxy authorized by an instrument in writing or by a transmission permitted by applicable law.

(b) Prior to a meeting of the stockholders of the Corporation, the Corporation shall appoint one or more inspectors to act at a meeting of stockholders of the Corporation and make a written report thereof. The Corporation may designate one or more persons as alternate inspectors to replace any inspector who fails to act. If no inspector or alternate is able to act at a meeting of stockholders, the person presiding at the meeting may, and to the extent required by applicable law, shall, appoint one or more inspectors to act at the meeting. Each inspector, before beginning the discharge of his or her duties, shall take and sign an oath faithfully to execute the duties of inspector with strict impartiality and according to the best of his or her ability. The inspectors may appoint or retain other persons or entities to assist the inspectors in the performance of the duties of inspectors. The inspectors shall have the duties prescribed by applicable law.

Section 1.10. Voting.

Except as otherwise required by the rules or regulations of any stock exchange applicable to the Corporation or pursuant to any law or regulation applicable to the Corporation or its securities or by the Certificate of Incorporation or these bylaws, all matters other than the election of directors

shall be determined by a majority of the votes cast on the matter affirmatively or negatively. All elections of directors shall be determined by a plurality of the votes cast.

Section 1.11. Action by Written Consent.

Stockholders may not take any action by written consent in lieu of a meeting of stockholders.

Section 1.12. Stock List.

A complete list of stockholders of the Corporation entitled to vote at any meeting of stockholders of the Corporation, arranged in alphabetical order for each class of stock and showing the address of each such stockholder and the number of shares registered in the name of such stockholder, shall be open to the examination of any such stockholder, for any purpose germane to a meeting of the stockholders of the Corporation, for a period of at least 10 days before the meeting (i) on a reasonably accessible electronic network, provided that the information required to gain access to such list is provided with the notice of the meeting or (ii) during ordinary business hours at the principal place of business of the Corporation; provided , however , if the record date for determining the stockholders entitled to vote is less than 10 days before the meeting date, the list shall reflect the stockholders entitled to vote as of the 10th day before such meeting date. If the meeting is to be held at a place, then a list of stockholders entitled to vote at the meeting shall be produced and kept at the time and place of the meeting during the whole time thereof and may be examined by any stockholder who is present. If the meeting is to be held solely by means of remote communication, then the list shall also be open to the examination of any stockholder during the whole time of the meeting on a reasonably accessible electronic network, and the information required to access such list shall be provided with the notice of the meeting.

Except as otherwise provided by law, the stock ledger shall be the sole evidence of the identity of the stockholders entitled to vote at a meeting and the number of shares held by each stockholder.

SECTION 2 – BOARD OF DIRECTORS

Section 2.1. General Powers and Qualifications of Directors.

The business and affairs of the Corporation shall be managed by or under the direction of the Board of Directors. In addition to the powers and authorities these bylaws expressly confer upon them, the Board of Directors may exercise all such powers of the Corporation and do all such lawful acts and things as are not by the DGCL or by the Certificate of Incorporation or by these bylaws required to be exercised or done by the stockholders. Directors need not be stockholders of the Corporation to be qualified for election or service as a director of the Corporation.

Section 2.2. Number; Classes.

Subject to the Stockholders Agreement and Section 5 hereof, the number of directors shall be fixed from time to time by resolution of the Board of Directors. The Board of Directors shall be divided into classes, as set forth in the Certificate of Incorporation.

Section 2.3. Removal; Resignation; Vacancies.

The directors of the Corporation may be removed in accordance with the Certificate of Incorporation and the DGCL. Any director may resign at any time upon notice given in writing, including by electronic transmission, to the Corporation. Subject to the Stockholders Agreement and Section 5 hereof, any vacancy caused by the death or resignation of any director or for any other reason, and any newly created directorship resulting from any increase in the authorized number of Directors, may be filled only by the affirmative vote of a majority of the directors then in office, although less than a quorum. Any director so elected to fill any such vacancy or newly created directorship shall hold office until the next election of the class for which such director has been chosen and until his or her successor is elected and qualified or until his or her earlier resignation or removal.

Section 2.4. Regular Meetings.

Regular meetings of the Board of Directors shall be held at the place (if any), on the date and at the time as shall have been established by the Board of Directors and publicized among all directors. A notice of a regular meeting, the date of which has been so publicized, shall not be required.

Section 2.5. Special Meetings.

Special meetings of the Board of Directors may be called by (i) the Chairman of the Board, (ii) the Lead Director, (iii) any two directors or (iv) the chief executive officer of the Corporation, and shall be held at the place, if any, on the date and at the time as he, she or they shall fix. Notice of the place, if any, date and time of each special meeting shall be given to each director either (a) by mailing written notice thereof not less than five days before the meeting, or (b) by telephone, facsimile or other means of electronic transmission providing notice thereof not less than twenty-four hours before the meeting. Any and all business may be transacted at a special meeting of the Board of Directors.

Section 2.6. Quorum.

At any meeting of the Board of Directors, a majority of the total number of directors then in office shall constitute a quorum for all purposes. If a quorum shall fail to attend any meeting, a majority of those present may adjourn the meeting to another place, if any, date or time, without further notice or waiver thereof.

Section 2.7. Participation in Meetings By Conference Telephone or Other Communications Equipment.

Members of the Board of Directors, or of any committee thereof, may participate in a meeting of the Board of Directors or committee thereof by means of conference telephone or other communications equipment by means of which all directors participating in the meeting can hear each other director, and such participation shall constitute presence in person at the meeting.

Section 2.8. Chairman; Vice Chairman.

Subject to Section 5 hereof, in its sole discretion based on current circumstances, the Board of Directors shall annually elect one of its members to be Chairman of the Board and shall fill any vacancy in the position of Chairman of the Board with a director at such time and in such manner as the board shall determine. The Chairman of the Board shall preside at all meetings of the Board of Directors at which he shall be present. Subject to Section 5 hereof, the Board of Directors may designate from its membership a Vice Chairman of the Board, who shall preside at all meetings of the stockholders and of the Board of Directors if the Chairman is not present (other than executive sessions of the Board of Directors when only non-management or independent members of the Board of Directors are present) as well as perform such functions and duties as may be prescribed by the Board of Directors or requested by the Chairman of the Board. A director may be removed from the position of Chairman of the Board or Vice Chairman of the Board at any time by the affirmative vote of a majority of the Board of Directors. Subject to Section 5 hereof, the Chairman of the Board and the Vice Chairman of the Board may but need not be officers or be employed in an executive or any other capacity by the Corporation.

Section 2.9. Lead Director.

The Board of Directors may designate a director as Lead Director. The responsibilities of the Lead Director shall include: (i) liaising between non-management directors and management; (ii) presiding at executive sessions of non-management directors, and at meetings of the Board of Directors when the Chairman is not present; (iii) consulting with the Chairman regarding agendas, schedules and information sent to the Board of Directors for meetings of the Board of Directors; (iv) consulting with the Chairman on other matters pertinent to the Corporation and the Board of Directors; (v) consulting with major shareholders upon their request; and (vi) such other responsibilities as the Board of Directors may determine from time to time.

Section 2.10. Conduct of Business.

At any meeting of the Board of Directors, business shall be transacted in the order and manner that the Board of Directors may from time to time determine, and all matters shall be determined by the vote of a majority of the directors present, provided a quorum is present at the time such matter is acted upon, except as otherwise provided in the Certificate of Incorporation or these bylaws or required by applicable law. The Board of Directors or any committee thereof may take action without a meeting if all members thereof consent thereto in writing or by electronic transmission, and the writing or writings, or electronic transmission or electronic transmissions, are filed with the minutes of proceedings of the Board of Directors or any committee thereof. Such filing shall be in paper form if the minutes are maintained in paper form and shall be in electronic form if the minutes are maintained in electronic form.

Section 2.11. Compensation of Directors.

The Board of Directors shall be authorized to fix the compensation of directors. The directors of the Corporation shall be paid their expenses, if any, of attendance at each meeting of the Board of Directors and may be reimbursed a fixed sum for attendance at each meeting of the Board of

Directors, paid an annual retainer or paid other compensation, including equity compensation, as the Board of Directors determines. No such payment shall preclude any director from serving the Corporation in any other capacity and receiving compensation therefor. Members of committees shall have their expenses, if any, of attendance of each meeting of such committee reimbursed and may be paid compensation as the Board of Directors determines for attending committee meetings or being a member of a committee.

SECTION 3 – COMMITTEES

Section 3.1. Committees of the Board of Directors.

The Board of Directors may designate committees of the Board of Directors, with such lawfully delegable powers and duties as it thereby confers, to serve at the pleasure of the Board of Directors and shall, for those committees, appoint a director or directors to serve as the member or members, designating, if it desires, other directors as alternate members who may replace any absent or disqualified member at any meeting of such committee. In the absence or disqualification of any member of any committee and any alternate member in his or her place, the member or members of the committee present at the meeting and not disqualified from voting, whether or not he or she or they constitute a quorum, may by unanimous vote appoint another member of the Board of Directors to act at the meeting in the place of the absent or disqualified member. All provisions of this Section 3.1 are subject to Section 5 hereof, and are subject to, and nothing in this Section 3.1 shall in any way limit the exercise, or method or timing of the exercise of, the rights of any person granted by the Corporation with respect to the existence, duties, composition or conduct of any committee of the Board of Directors including without limitation, such rights contained in the Stockholders Agreement.

SECTION 4 – OFFICERS

Section 4.1. Generally.

The officers of the Corporation shall consist of a Chief Executive Officer or President, one or more Vice Presidents, a Secretary, one or more Assistant Secretaries, a Treasurer, one or more Assistant Treasurers, a Chief Financial Officer and other officers as may from time to time be appointed by the Board of Directors. Each officer shall hold office until his or her successor is elected and qualified or until his or her earlier resignation or removal. Any number of offices may be held by the same person. The compensation of officers appointed by the Board of Directors shall be determined from time to time by the Board of Directors or a committee thereof or by the officers as may be designated by resolution of the Board of Directors.

Section 4.2. President.

Unless otherwise determined by the Board of Directors, the President shall be the Chief Executive Officer of the Corporation. Subject to the provisions of these bylaws and to the direction of the Board of Directors, he or she shall have the responsibility for the general management and control of the business and affairs of the Corporation and shall perform all duties and have all powers that are commonly incident to the office of chief executive or which are delegated to him or her by the Board of Directors. He or she shall have the power to sign all stock certificates, contracts and other instruments of the Corporation that are authorized and shall

have general supervision and direction of all of the other officers, employees and agents of the Corporation.

Section 4.3. Vice President.

Each Vice President shall have the powers and duties delegated to him or her by the Board of Directors or the President. One Vice President may be designated by the Board of Directors to perform the duties and exercise the powers of the President in the event of the President's absence or disability.

Section 4.4. Secretary and Assistant Secretaries.

The Secretary shall issue all authorized notices for, and shall keep minutes of, all meetings of the stockholders and the Board of Directors. He or she shall have charge of the corporate books and shall perform other duties as the Board of Directors may from time to time prescribe.

Any Assistant Secretary shall perform such duties and possess such powers as the Board of Directors, the Chief Executive Officer or the Secretary may from time to time prescribe. In the event of the absence, inability or refusal to act of the Secretary, the Assistant Secretary, (or if there shall be more than one, the Assistant Secretaries in the order determined by the Board of Directors) shall perform the duties and exercise the powers of the Secretary.

Section 4.5. Chief Financial Officer, Treasurer and Assistant Treasurers.

The Chief Financial Officer shall keep or cause to be kept the books of account of the Corporation in a thorough and proper manner and shall render statements of the financial affairs of the Corporation in such form and as often as required by the Board of Directors or the President. The Chief Financial Officer, subject to the order of the Board of Directors, shall have the custody of all funds and securities of the Corporation. The Chief Financial Officer shall perform other duties commonly incident to his office and shall also perform such other duties and have such other powers as the Board of Directors or the President shall designate from time to time. The President may direct the Treasurer or any Assistant Treasurer to assume and perform the duties of the Chief Financial Officer in the absence or disability of the Chief Financial Officer, and each Treasurer and Assistant Treasurer shall perform other duties commonly incident to his office and shall also perform such other duties and have such other powers as the Board of Directors or the President shall designate from time to time.

Section 4.6. Delegation of Authority.

The Board of Directors may from time to time delegate the powers or duties of any officer to any other officer or agent, notwithstanding any provision hereof.

Section 4.7. Removal.

The Board of Directors may remove any officer of the Corporation at any time, with or without cause.

Section 4.8. Action with Respect to Securities of Other Companies.

Unless otherwise directed by the Board of Directors, the President, or any officer of the Corporation authorized by the President, shall have power to vote and otherwise act on behalf of the Corporation, in person or by proxy, at any meeting of stockholders or equityholders of, or with respect to any action of, stockholders or equityholders of any other entity in which the Corporation may hold securities and otherwise to exercise any and all rights and powers which the Corporation may possess by reason of its ownership of securities in such other entity.

SECTION 5 – CERTAIN GOVERNANCE MATTERS

Section 5.1. Definitions. The following definitions shall apply to this Section 5 and otherwise as applicable in these bylaws:

(a) “Continuing IMS Health Directors” means (i) directors as of the Effective Time designated by IMS Health Holdings, Inc. and named in Exhibit B of the Merger Agreement and (ii) any director who takes office after the Effective Time designated by the Continuing IMS Health Directors pursuant to these bylaws.

(b) “Continuing Quintiles Directors” means (i) directors as of the Effective Time designated by Quintiles Transnational Holdings Inc. and named in Exhibit B of the Merger Agreement and (ii) any director who takes office after the Effective Time designated by the Continuing Quintiles Directors pursuant to these bylaws.

(c) “Effective Time” has the meaning specified in the Merger Agreement.

(d) “Merger Agreement” means that certain Agreement and Plan of Merger, dated May 3, 2016, by and between Quintiles Transnational Holdings Inc. and IMS Health Holdings, Inc, as amended, restated or otherwise modified from time to time.

(e) “Specified Period” means the period beginning at the Effective Time and ending on the date following the second annual meeting of stockholders of the Corporation following the Effective Time.

Section 5.2. Composition of the Board of Directors.

(a) (During the Specified Period, the Board of Directors shall be comprised of 12 directors, of which six (6) directors shall be Continuing Quintiles Directors and six (6) directors shall be Continuing IMS Health Directors. The Continuing IMS Health Directors and Continuing Quintiles Directors shall be apportioned among the classes of the Board of Directors as nearly as evenly as possible.

(b) In any case subject to, and following compliance with, the right of a particular Shareholder Group (as defined in the Stockholders Agreement) or other persons to fill any vacancies or directorships pursuant to the Stockholders Agreement, during the Specified Period, vacancies resulting from the cessation of service by any Continuing Quintiles Director shall be filled by, and each nomination for election to the Board of Directors for a directorship previously

held by a Continuing Quintiles Director shall be, an individual whose appointment or election is endorsed by at least a majority of Continuing Quintiles Directors then in office.

(c) In any case subject to, and following compliance with, the right of a particular Shareholder Group (as defined in the Stockholders Agreement) or other persons to fill any vacancies or directorships pursuant to the Stockholders Agreement, during the Specified Period, vacancies resulting from the cessation of service by any Continuing IMS Health Director shall be filled by, and each nomination for election to the Board of Directors for a directorship previously held by a Continuing IMS Health Director shall be, an individual whose appointment or election is endorsed by at least a majority of Continuing IMS Health Directors then in office.

(d) The Board of Directors shall at all times comply with the Certificate of Incorporation, these bylaws and applicable rules and regulations of the Securities and Exchange Commission and the New York Stock Exchange with respect to the qualification of directors serving on the Board of Directors.

Section 5.3. Composition of Committees of the Board of Directors. During the Specified Period, each committee of the Board of Directors shall be composed of an equal number of Continuing IMS Health Directors and Continuing Quintiles Directors. With respect to each committee: (i) the Continuing IMS Health Directors shall designate a Continuing IMS Health Director as the chairperson of the Leadership Development and Compensation Committee; (ii) the Continuing Quintiles Directors shall designate a Continuing Quintiles Director as the chairperson of the Nominating and Governance Committee; (iii) the Continuing Quintiles Directors and the Continuing IMS Health Directors shall jointly designate the chairperson of the Audit Committee. Without limiting the foregoing, any director shall have the right to attend the meeting of any committee of the Board of Directors, except during any executive session.

Section 5.4. Lead Director. Effective as of the Effective Time and during the Specified Period, Dr. Dennis Gillings shall serve as the Lead Director. During the Specified Period, in the event of the termination of Dr. Gillings' appointment as Lead Director for any reason (whether resignation, death or removal), the Lead Director shall be a director selected by a majority of the Continuing Quintiles Directors. Following the expiration of the Specified Period, the Lead Director, if any, shall be a director selected by a majority of the Board of Directors.

Section 5.5. Vice Chairman. Effective as of the Effective Time, Thomas Pike shall become and serve as Vice Chairman of the Board of Directors and during Thomas Pike's service as Vice Chairman, the Vice Chairman shall have executive responsibilities. During the Specified Period, in the event of the termination of Thomas Pike's appointment as Vice Chairman for any reason (whether resignation, death or removal) and the Board determines that it is in the best interests of the Corporation to continue to have a Vice Chairman, the Vice Chairman shall be a director selected by a majority of the Continuing Quintiles Directors. Following the expiration of the Specified Period, the Vice Chairman, if any, shall be a director selected by a majority of the Board of Directors.

Section 5.6. Amendments. During the Specified Period, the provisions of this Section 5 may be amended only by an affirmative vote of at least two-thirds (2/3) of the Board of Directors.

SECTION 6 – STOCK

Section 6.1. Certificates of Stock.

Shares of the capital stock of the Corporation may be certificated or uncertificated, as provided in the DGCL. Stock certificates shall be signed by, or in the name of the Corporation by, (i) the Chairman of the Board (if any) or the Vice Chairman of the Board (if any), the President or a Vice President, and (ii) the Secretary or an Assistant Secretary, or the Treasurer or an Assistant Treasurer, or the Chief Financial Officer, certifying the number of shares owned by such stockholder. Any signatures on a certificate may be by facsimile.

Section 6.2. Transfers of Stock.

Transfers of stock shall be made only upon the transfer books of the Corporation kept at an office of the Corporation (within or without the State of Delaware) or by transfer agents designated to transfer shares of the stock of the Corporation.

Section 6.3. Lost, Stolen or Destroyed Certificates.

In the event of the loss, theft or destruction of any certificate of stock, another may be issued in its place pursuant to regulations as the Board of Directors may establish concerning proof of the loss, theft or destruction and concerning the giving of a satisfactory bond or indemnity, if deemed appropriate.

Section 6.4. Regulations.

The issue, transfer, conversion and registration of certificates of stock of the Corporation shall be governed by other regulations as the Board of Directors may establish.

Section 6.5. Record Date.

(a) In order that the Corporation may determine the stockholders entitled to notice of any meeting of stockholders or any adjournment thereof, the Board of Directors may fix a record date, which record date shall not precede the date upon which the resolution fixing the record date is adopted by the Board of Directors, and which record date shall, unless otherwise required by law, not be more than 60 nor less than 10 days before the date of such meeting. If the Board of Directors so fixes a date, such date shall also be the record date for determining the stockholders entitled to vote at such meeting unless the Board of Directors determines, at the time it fixes such record date, that a later date on or before the date of the meeting shall be the date for making such determination. If no record date is fixed by the Board of Directors, the record date for determining stockholders entitled to notice of or to vote at a meeting of stockholders shall be at the close of business on the day next preceding the day on which notice is given, or, if notice is waived, at the close of business on the day next preceding the day on which the meeting is held. A determination of stockholders of record entitled to notice of or to vote at a meeting of stockholders shall apply to any adjournment of the meeting; provided, however, that the Board of Directors may fix a new record date for determination of stockholders entitled to vote at the adjourned meeting, and in such case shall also fix as the record date for stockholders entitled to notice of such adjourned meeting the same or an earlier date as that fixed for determination of stockholders entitled to vote in accordance herewith at the adjourned meeting.

(b) In order that the Corporation may determine the stockholders entitled to receive payment of any dividend or other distribution or allotment of any rights, or entitled to exercise any rights in respect of any change, conversion or exchange of stock or for the purpose of any other lawful action, the Board of Directors may fix a record date, which shall not be more than 60 days prior to such other action. If no such record date is fixed, the record date for determining stockholders for any such purpose shall be at the close of business on the day on which the Board of Directors adopts the resolution relating thereto.

SECTION 7 – NOTICES

Section 7.1. Notices.

Except as otherwise provided herein or permitted by applicable law, notices to directors and stockholders shall be in writing and delivered personally or mailed to the directors or

stockholders at their addresses appearing on the books of the Corporation. If mailed, notice to a stockholder of the Corporation shall be deemed given when deposited in the mail, postage prepaid, directed to a stockholder at such stockholder's address as it appears on the records of the Corporation. Without limiting the manner by which notice otherwise may be given effectively to stockholders, any notice to stockholders of the Corporation may be given by electronic transmission in the manner provided in Section 232 of the DGCL.

Section 7.2. Waivers.

A written waiver of any notice, signed by a stockholder or director, or a waiver by electronic transmission by such person or entity, whether given before or after the time of the event for which notice is to be given, shall be deemed equivalent to the notice required to be given to such person or entity. Neither the business nor the purpose of any meeting need be specified in the waiver. Attendance at any meeting shall constitute waiver of notice except attendance for the sole purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened.

SECTION 8 – MISCELLANEOUS

Section 8.1. Corporate Seal.

The Board of Directors may provide a suitable seal, containing the name of the Corporation, which seal shall be in the charge of the Secretary of the Corporation. If and when so directed by the Board of Directors, duplicates of the seal may be kept and used by the Treasurer or by an Assistant Secretary, Assistant Treasurer or the Chief Financial Officer.

Section 8.2. Reliance upon Books, Reports, and Records.

Each director and each member of any committee designated by the Board of Directors of the Corporation shall, in the performance of his or her duties, be fully protected in relying in good faith upon the books and records of the Corporation and upon such information, opinions, reports or statements presented to the Corporation by any of its officers, agents or employees, or committees of the Board of Directors so designated, or by any other person or entity as to matters which such director or committee member reasonably believes are within such other person's or entity's professional or expert competence and that has been selected with reasonable care by or on behalf of the Corporation.

Section 8.3. Fiscal Year.

The fiscal year of the Corporation shall be as fixed by the Board of Directors. If the Board makes no determination to the contrary, the fiscal year of the Corporation shall be the twelve months ending with December 31 in each year.

Section 8.4. Time Periods.

In applying any provision of these bylaws that requires that an act be done or not be done a specified number of days before an event or that an act be done during a specified number of

days before an event, calendar days shall be used, the day of the doing of the act shall be excluded, and the day of the event shall be included.

Section 8.5. Exclusive Forum.

To the fullest extent permitted by law, unless the Corporation consents in writing to the selection of an alternate forum, the sole and exclusive forum for all litigation relating to the internal affairs of the Corporation, including without limitation (i) any derivative action or proceeding brought on behalf of the Corporation, (ii) any action asserting a claim of breach of a fiduciary duty owed by any director, officer or other employee of the Corporation to the Corporation or the stockholders of the Corporation, (iii) any action asserting a claim arising pursuant to any provision of the DGCL, the Certificate of Incorporation or these bylaws (in each case, as they may be amended from time to time), or (iv) any action asserting a claim governed by the internal affairs doctrine, shall be a state court located within the State of Delaware, or, if no state court located within the State of Delaware has jurisdiction, the federal district court for the District of Delaware.

SECTION 9 – AMENDMENTS

Except as otherwise provided herein, these bylaws may be altered, amended or repealed in accordance with the Certificate of Incorporation and the DGCL.

IQVIA Holdings Inc.
Subsidiary Listing - as of 12/31/2019

Subsidiary	Jurisdiction or State of Organization
159 Solutions LLC	California
159 Technology Solutions Private Ltd	India
AECIO IT Solutions India Private Ltd.	India
Albatross Financial Solutions Limited	United Kingdom
ALIMED Egészségügyi Szolgáltató Kft.	Hungary
Appature, Inc.	Washington
Ardentia International Limited	United Kingdom
Ascott Sales Integration Pty Ltd	Australia
Asesorias IQVIA Solutions Chile Limitada	Chile
Asophäre GmbH	Germany
Asserta Centroamerica Medicion de Mercados, S.A.	Guatemala
Battaerd Mansley (Proprietary) Limited	South Africa
Battaerd Mansley Pty. Ltd.	Australia
Benefit Holding, Inc.	North Carolina
BioFortis, LLC	Delaware
BuzzeoPDMA LLC	Delaware
Cambridge Pharma Consultancy Limited	United Kingdom
Cambridge Pharma Consultancy, Inc.	Delaware
Capionis SARL	France
CDS - Center de Service SAS	France
Cegedim Venezuela C.A.	Venezuela
Cenduit (India) Services Private Company Limited	India
Cenduit GmbH	Switzerland
Cenduit Holdings, LLC	Delaware
Cenduit Japan GK	Japan
Cenduit Limited	United Kingdom
Cenduit LLC	Delaware
Cenduit Mauritius Holdings Company	Mauritius
Clinical Financial Services, LLC	Pennsylvania
Clinical Insourcing Solutions S. de R.L. de C.V.	Mexico
Clinical Lab Minority Shareholder Limited	United Kingdom
ClinTec Austria GmbH	Austria
ClinTec Egypt LLC	Egypt
ClinTec Gesellschaft für Klinische Entwicklung GmbH	Germany
ClinTec International (Pty) Ltd.	South Africa
ClinTec International (Thailand) Limited N/A	Thailand
ClinTec International AG	Switzerland
ClinTec International Belgium BVBA	Belgium
ClinTec International Bulgaria OOD	Bulgaria

ClinTec International Co., Ltd.	South Korea
ClinTec International Denmark ApS	Denmark
ClinTec International doo	Serbia
ClinTec International Hong Kong Limited	Hong Kong
ClinTec International Hungary Kft	Hungary
ClinTec International Inc.	Delaware
ClinTec International Italy S.r.l.	Italy
ClinTec International K.K.	Japan
ClinTec International Limited	Kenya
ClinTec International Limited	New Zealand
ClinTec International Limited	Taiwan
ClinTec International LLC	Ukraine
ClinTec International Ltd	Netherlands
ClinTec International Ltd, UK, Filial Sverige	Sweden
ClinTec International Ltd.	England
ClinTec International Norway AS	Norway
ClinTec International Off-Shore S.A.L.	Lebanon
ClinTec International OY	Finland
Clintec International Pharmaceutical Services Ltd	Israel
ClinTec International Pte Ltd	Singapore
ClinTec International Pty Ltd	Australia
ClinTec International Romania S.R.L.	Romania
ClinTec International RUS LLC	Russia
ClinTec International s.r.o.	Czech Republic
ClinTec International SARL	France
ClinTec International Services Inc.	Canada
ClinTec International SL	Spain
ClinTec International sp. z.o.o.	Poland
ClinTec Luxembourg S.A.	Luxembourg
ClinTec Turkey Medikal ve Farmasotik Hizmetler Ticaret Limited Sirketi	Turkey
ClinTech Ireland International Research Limited	Ireland
CRM Health Korea Ltd.	Korea
CSD Health Korea Ltd.	Korea
CT Clinical Portugal Unipessoal LDA	Portugal
CT Clinical Services EOOD	Bulgaria
CT Consulting Inc.	Philippines
Data Niche Associates, Inc.	Illinois
Dataline Software Limited	United Kingdom
Datandina Ecuador S.A.	Ecuador
Datec Industria e Comercio, Distribudora Grafica e Mala Direta Ltda.	Brazil
Dimensions Healthcare LLC	Abu Dhabi

Drug Dev Inc.	Delaware
DrugDev Limited	United Kingdom
EA Institute L.L.C.	Delaware
Enterprise Associates, LLC	Delaware
Epernicus, LLC	Delaware
EPS Research Limited	United Kingdom
EPS Software Limited	United Kingdom
Exepi SAS	France
Forcea NV	Belgium
Foresight Group International UK LTD	United Kingdom
Foresight IT Solutions Consulting India Private Limited	India
GCE Clin Solutions Limited	United Kingdom
GCE Global Solutions, LLC	Delaware
GCE Solutions B.V.	Netherlands
GCE Solutions GmbH	Germany
GCE Solutions Inc.	Canada
GCE Solutions International, LLC	Delaware
GCE Solutions US, LLC	Delaware
GCE Solutions, GmbH	Switzerland
GCE Solutions, P.L.	South Africa
GCE Solutions, S. de R.L. de C.V.	Mexico
genae Americas, Inc.	Delaware
genae Associates NV	Belgium
genae Germany GmbH	Germany
genae International AG	Switzerland
Global Crown Investment Limited	Hong Kong
Grace Data Corporation	Nebraska
Gunjan Cutting Edge Solutions, Inc.	Georgia
Highpoint Solutions, LLC	Pennsylvania
Highpoint Solutions, LLC	Switzerland
Hospital Marketing Services Ltd.	United Kingdom
Hotel Lot C-8B, LLC	North Carolina
Iasist Holdco Limited	United Kingdom
Iasist Portugal, Consultadoria na Área de Saúde, Unipessoal, Lda	Portugal
Iasist SAU Agencia en Chile	Chile
Iasist Sociedad Anonima Unipersonal	Spain
iGuard, Inc.	North Carolina
Impact RX, LLC	South Africa
IMS Health Korea Ltd	Korea
IMS (UK) Pension Plan Trustee Company Limited	United Kingdom
IMS AB	Sweden
IMS Health (Australia) Partnership	Australia
IMS Health Bangladesh Limited	Bangladesh

IMS Health de Venezuela C.A.	Venezuela
IMS Health Egypt Limited	Egypt
IMS Health Group Limited	United Kingdom
IMS Health Information Solutions Australia Pty. Ltd	Australia
IMS Health Information Solutions India Private Ltd.	India
IMS Health Lanka (Private) Limited	Sri Lanka
IMS Health Networks Limited	United Kingdom
IMS Health Paraguay SRL	Paraguay
IMS Health Puerto Rico Inc.	Puerto Rico
IMS Health Surveys Limited	United Kingdom
IMS Health Technology Solutions Holdings AB	Sweden
IMS Health Technology Solutions Sweden AB	Sweden
IMS Health Technology TUNISIA	Tunisia
IMS Health Tunisia sarl	Tunisia
IMS Health Uruguay S.A.	Uruguay
IMS Holdings (U.K.) Limited	United Kingdom
IMS Hospital Group Limited	United Kingdom
IMS Information Solutions Medical Research Limited	United Kingdom
IMS Information Solutions UK Ltd.	United Kingdom
IMS International (Proprietary) Limited	South Africa
IMS Meridian Limited	Hong Kong
IMS Meridian Research Limited	British Virgin Islands
IMS Software Services Ltd.	Delaware
IMS Technology Solutions UK Limited	United Kingdom
Incarnus Malaysia Sdn Bhd	Malaysia
Infocus Health Limited	United Kingdom
Infopharm Ltd.	United Kingdom
Innovex Holdings I LLC	Delaware
Innovex Merger Corp.	North Carolina
Innovex Saglik Hizmetleri Arastirma ve Danismanlik Ticaret Limited Sirketi	Turkey
Innovex Saglik Urunleri Pazarlame ve Hizmet Danismanlik Anonim Sirketi	Turkey
Institute of Medical Communications NCO	Russia
Intercontinental Medical Statistics International, Ltd.	Delaware
Interstatistik AG	Switzerland
IPP Informacion Promocional y Publicitaria S.A. de C.V.	Mexico
IQVA Romania S.R.L.	Romania
IQVIA Medical Development (Dalian) Co., Ltd.	China
IQVIA Solutions Pakistan (Private) Limited	Pakistan
IQVIA SOLUTIONS PHILIPPINES, INC.	Philippines
IQVIA (Thailand) Co. Ltd.	Thailand
IQVIA AB	Sweden
IQVIA Adriatic d.o.o. za Konzalting	Croatia
IQVIA AG	Switzerland

IQVIA Asia Pacific Commercial Holdings LLC	North Carolina
IQVIA Beteiligungs-gesellschaft mbH	Germany
IQVIA BioSciences Holdings LLC	Delaware
IQVIA Biotech LLC	Delaware
IQVIA Chinametrik inc.	Delaware
IQVIA Clinical AB	Sweden
IQVIA Commercial Consulting Sp. z.o.o.	Poland
IQVIA Commercial Deutschland GmbH	Germany
IQVIA COMMERCIAL FINANCE INC.	Delaware
IQVIA Commercial GmbH & Co. OHG	Germany
IQVIA Commercial I LLC	Delaware
IQVIA Commercial India Holdings Corp.	Delaware
IQVIA Commercial Services LLC	Delaware
IQVIA Commercial Software GmbH	Germany
IQVIA Commercial Sp. z.o.o.	Poland
IQVIA Commercial Trading Corp.	Delaware
IQVIA Consulting and Information Services India Private Limited	India
IQVIA Consulting Solutions bvba	Belgium
IQVIA CSMS GmbH	Germany
IQVIA CSMS US Inc.	Delaware
IQVIA Finance Ireland Designated Activity Company	Ireland
IQVIA GOVERNMENT SOLUTIONS INC.	Delaware
IQVIA Hellas Technology Solutions S.A.	Greece
IQVIA Holdings France SAS	France
IQVIA IES (UK) Limited	United Kingdom
IQVIA IES Brasil Ltda.	Brazil
IQVIA IES DenmarkApS	Denmark
IQVIA IES Europe Limited	United Kingdom
IQVIA IES European Holdings	United Kingdom
IQVIA IES Italia S.r.l.	Italy
IQVIA IES Overseas Holdings Limited	United Kingdom
IQVIA IES OY	Finland
IQVIA IES Portugal Unipessoal Ltda.	Spain
IQVIA IES Portugal, Unipessoal Lda.	Portugal
IQVIA IES Puerto Rico Inc.	Puerto Rico
IQVIA II Technology Solutions Portugal, Unipessoal LDA	Portugal
IQVIA Inc.	Delaware
IQVIA Information Medical Statistics (Israel) Ltd.	Israel
IQVIA Information Solutions (China) Co., Ltd.	China
IQVIA Information Solutions GmbH	Austria
IQVIA Information, S.A.	Spain
IQVIA Informations Solutions France SAS	France
IQVIA Istanbul Saglik Hizmetler Arastirma ve Danismanlik Limited Sirketi	Turkey

IQVIA Korea Co. Ltd.	Korea
IQVIA Lebanon S.A.R.L.	Lebanon
IQVIA LTD	United Kingdom
IQVIA Market Intelligence LLC	North Carolina
IQVIA Marktforschung GmbH	Austria
IQVIA Maroc SARL	Morocco
IQVIA Mauritius Holdings, Inc.	Mauritius
IQVIA Medical Communications & Consulting, Inc.	North Carolina
IQVIA Medical Education Inc.	New York
IQVIA Medical Radar AB	Sweden
IQVIA Operations France SAS	France
IQVIA Partners AS	Denmark
IQVIA Pharma Inc.	North Carolina
IQVIA Pharma Services Corp.	North Carolina
IQVIA Pharmaceutical Marketing Services Ltd.	Slovenia
IQVIA Phase One Services LLC	Kansas
IQVIA RDS (India) Private Limited	India
IQVIA RDS (Pty.) Limited	South Africa
IQVIA RDS (Shanghai) Co. Ltd.	China
IQVIA RDS AG	Switzerland
IQVIA RDS and Integrated Services Belgium NV	Belgium
IQVIA RDS Argentina S.A.	Argentina
IQVIA RDS Asia Inc.	North Carolina
IQVIA RDS Austria GmbH	Austria
IQVIA RDS Brasil Ltda.	Brazil
IQVIA RDS BT Inc.	North Carolina
IQVIA RDS Bulgaria EOOD	Bulgaria
IQVIA RDS Canada ULC	Canada
IQVIA RDS Clindepharm (Pty.) Limited	South Africa
IQVIA RDS Colombia S.A.S.	Colombia
IQVIA RDS Costa Rica, S.A.	Costa Rica
IQVIA RDS Czech Republic, s.r.o.	Czech Republic
IQVIA RDS d.o.o. Beograd	Serbia
IQVIA RDS East Asia Pte. Ltd.	Singapore
IQVIA RDS Eastern Holdings GmbH	Austria
IQVIA RDS Egypt LLC	Egypt
IQVIA RDS ESTONIA OU	Estonia
IQVIA RDS Finland OY	Finland
IQVIA RDS France SAS	France
IQVIA RDS Funding LLC	North Carolina
IQVIA RDS GmbH	Austria
IQVIA RDS GmbH	Germany
IQVIA RDS Guatemala S.A.	Guatemala

IQVIA RDS HELLAS Single Member Societe Anonyme	Greece
IQVIA RDS Holdings	United Kingdom
IQVIA RDS Hong Kong Limited	Hong Kong
IQVIA RDS Inc.	North Carolina
IQVIA RDS Ireland Ltd.	Ireland
IQVIA RDS Israel Ltd.	Israel
IQVIA RDS Italy Srl	Italy
IQVIA RDS Latin America LLC	North Carolina
IQVIA RDS Latvia SIA	Latvia
IQVIA RDS Magyarország Gyogyszerfejlesztési es Tanacsado Kft.	Hungary
IQVIA RDS Malaysia Sdn. Bhd.	Malaysia
IQVIA RDS Netherlands BV	Netherlands
IQVIA RDS Panama Inc.	Panama
IQVIA RDS Peru S.r.l.	Peru
IQVIA RDS Philippines Inc.	Philippines
IQVIA RDS Poland Sp. Zoo	Poland
IQVIA RDS Pty. Limited	Australia
IQVIA RDS Slovakia s.r.o.	Slovakia
IQVIA RDS Spain S.L.	Spain
IQVIA RDS Switzerland sarl	Switzerland
IQVIA RDS Taiwan Ltd.	Taiwan
IQVIA RDS Transfer LLC	Delaware
IQVIA RDS UAB	Lithuania
IQVIA RDS UK Holdings Ltd.	United Kingdom
IQVIA RDS Vietnam Limited Liability Company	Vietnam
IQVIA Research and Development Solutions Saudi Arabia Limited	Saudi Arabia
IQVIA Services Japan K.K.	Japan and Delaware
IQVIA Soluções de Tecnologia do Brasil Ltda	Brazil
IQVIA Solutions (NZ) Limited	New Zealand
IQVIA Solutions (Pty.) Ltd.	South Africa
IQVIA Solutions a.s.	Czech Republic
IQVIA Solutions Argentina S.A.	Argentina
IQVIA Solutions Asia Pte. LTD.	Singapore
IQVIA Solutions Australia Holdings Pty. Ltd.	Australia
IQVIA Solutions Australia Pty. Ltd.	Australia
IQVIA Solutions B.V.	Netherlands
IQVIA Solutions Belgium S.P.R.L.	Belgium
IQVIA Solutions Bolivia S.R.L.	Bolivia
IQVIA Solutions Bulgaria EOOD	Bulgaria
IQVIA Solutions Canada Inc.	Canada
IQVIA Solutions Colombia S.A.	Colombia
IQVIA Solutions Consulting Myanmar Company Limited	Myanmar
IQVIA Solutions del Peru S.A.	Peru

IQVIA Solutions Denmark AS	Denmark
IQVIA Solutions do Brasil Ltda.	Brazil
IQVIA Solutions Enterprise Management Consulting (Shanghai) Co., Ltd.	China
IQVIA Solutions Enterprise Management Consulting (Shanghai) Co., Ltd. Beijing Branch	China
IQVIA Solutions Finance B.V.	Netherlands
IQVIA Solutions Finance UK I Ltd.	United Kingdom
IQVIA Solutions Finance UK II Ltd.	United Kingdom
IQVIA Solutions Finance UK III Ltd.	United Kingdom
IQVIA Solutions Finance UK V Ltd.	United Kingdom
IQVIA Solutions Finland OY	Finland
IQVIA Solutions Global Holdings UK Ltd.	United Kingdom
IQVIA Solutions GmbH	Switzerland
IQVIA Solutions Holdings (Pty.) Ltd.	South Africa
IQVIA Solutions Hong Kong Limited	Hong Kong
IQVIA Solutions HQ Ltd.	United Kingdom
IQVIA Solutions Ireland Limited	Ireland
IQVIA Solutions Italy S.r.l.	Italy
IQVIA Solutions Japan K.K.	Japan and Delaware
IQVIA Solutions Kazakhstan LLC	Kazakhstan
IQVIA Solutions LLC	Russia
IQVIA Solutions Malaysia Sdn. Bhd.	Malaysia
IQVIA Solutions Norway AS	Norway
IQVIA SOLUTIONS OPERATIONS CENTER PHILIPPINES INC.	Philippines
IQVIA Solutions Pharmaceutical SRL	Romania
IQVIA Solutions Portugal, Lda.	Portugal
IQVIA Solutions Regional Pte. Ltd.	Singapore
IQVIA Solutions Republica Dominicana, S.R.L.	Dominican Republic
IQVIA Solutions s.r.o.	Slovak Republic
IQVIA Solutions Saudi Arabia Limited	Saudi Arabia
IQVIA Solutions Services Ltd.	Hungary
IQVIA Solutions Sweden AB	Sweden
IQVIA Solutions TAIWAN LTD.	Taiwan
IQVIA Solutions UK Investments Ltd.	United Kingdom
IQVIA Solutions UK Limited	United Kingdom
IQVIA Staff Services Sp.A.	Italy
IQVIA Technology and Services AG	Switzerland
IQVIA Technology Services Ltd.	United Kingdom
IQVIA Technology Solutions (China) Co., Ltd.	China
IQVIA Technology Solutions Colombia Ltda.	Colombia
IQVIA Technology Solutions Egypt LLC	Egypt
IQVIA Technology Solutions Finland OY	Finland
IQVIA Technology Solutions Poland SP. z.o.o.	Poland
IQVIA Technology Solutions Romania Srl	Romania

IQVIA Technology Solutions s.r.o.	Czech Republic
IQVIA Technology Solutions s.r.o.	Slovak Republic
IQVIA Technology Solutions Ukraine LLC	Ukraine
IQVIA Tibbi Istatistik Ticaret ve Musavirlik Ltd. Sirketi	Turkey
IQVIA Trading Management Inc.	Delaware
IQVIA Transportation Services Corp.	Delaware
IQVIA World Publications Ltd.	United Kingdom
IQVIA Zagreb d.o.o.	Croatia
Jäger Health Koln GmbH	Germany
Kun Tai Medical Development Hong Kong Limited	Hong Kong
Kun Tuo Medical Research & Development (Beijing) Co. Ltd.	China
Laboratorio Commuq Pharma SL	Spain
Linguamatics Limited	United Kingdom
Linguamatics Solutions Incorporated	Delaware
Linguamatics Solutions Limited	United Kingdom
M&H Informatics (BD) LTD.	Bangladesh
Mecurial Insights Holding Pty. Ltd.	Australia
Mecurial Insights Pty. Ltd.	Australia
MedData Group, LLC	Massachusetts
MediSense Ltd.	Israel
Medineos S.r.l.	Italy
Med-Vantage, Inc.	Delaware
Mercados Y Analisis, S.A.	Spain
Meridian Research Vietnam Ltd.	Vietnam
Nordisk Medicin Information AB	Sweden
Novasyste, LLC	California
Novella Clinical Ltd.	United Kingdom
Novex Pharma GmbH	Germany
Novex Pharma Laboratorio S.L.	Spain
Novex Pharma Limited	United Kingdom
Nuevo Health Pty Ltd	Australia
Onkodatamed GmbH	Germany
Operaciones Centralizadas Latinoamericana Limitada	Chile
Optimum Contact Limited	United Kingdom
Outcome Sciences LLC	Delaware
Penderwood Limited	United Kingdom
Pharma Deals Limited	United Kingdom
Pharma Strategy Group Ltd.	United Kingdom
Pharmadata s.r.o.	Slovak Republic
Pharmaforce, S.A. de C.V.	Mexico
PharmARC Consulting Services GmbH	Switzerland
PharmARC Inc.	New Jersey
Pilgrim Software Asia PVT, Ltd	Nepal

Polaris Management Partners LLC	New Jersey
Polaris Solutions Ltd.	Hong Kong
Polaris Solutions, LLC	New York
PR Editions S.A.S.	France
Primeum IQVIA SAS	France
Privacy Analytics Inc.	Canada
Professional Pharmaceutical Marketing Services (Pty.) Ltd.	South Africa
PT IQVIA Solutions Indonesia	Indonesia
PT Quintiles Indonesia	Indonesia
Pygargus AB	Sweden
Q Squared Solutions (Beijing) Co. Ltd.	China
Q Squared Solutions (India) Private Limited	India
Q Squared Solutions (Quest) Limited	United Kingdom
Q Squared Solutions (Quest) LLC	Delaware
Q Squared Solutions (Shanghai) Co. Ltd.	China
Q Squared Solutions B.V.	Netherlands
Q Squared Solutions BioSciences LLC	Delaware
Q Squared Solutions China (Quest) Limited	United Kingdom
Q Squared Solutions China Limited	United Kingdom
Q Squared Solutions Expression Analysis LLC	Delaware
Q Squared Solutions Holdings B.V.	Netherlands
Q Squared Solutions Holdings Limited	United Kingdom
Q Squared Solutions Holdings LLC	Delaware
Q Squared Solutions K.K.	Japan
Q Squared Solutions Limited	United Kingdom
Q Squared Solutions LLC	North Carolina
Q Squared Solutions Proprietary Limited	South Africa
Q Squared Solutions Pte. Ltd.	Singapore
Q Squared Solutions S.A.	Argentina
Qcare Site Services, Inc.	North Carolina
QIMS Pharma Services SA DE CV	Mexico
Quintiles Benin Ltd.	Benin
Quintiles Clindata (Pty.) Limited	South Africa
Quintiles Clinical and Commercial Nigeria Limited	Nigeria
Quintiles Commercial Rus LLC	Russia
Quintiles Commercial South Africa (Pty) Limited	South Africa
Quintiles East Africa Limited	Kenya
Quintiles Finance Uruguay, S.r.l.	Uruguay
Quintiles Lanka Private Limited	Sri Lanka
Quintiles Medical Development (Shanghai) Co. Ltd.	China
Quintiles Mexico, S. DE R.L. DE C.V.	Mexico
Quintiles Phase One Clinical Trials India Private Limited	India
Quintiles Russia LLC	Russia

Quintiles Site Services, S.A.	Costa Rica
Quintiles South Africa (PTY.) Limited	South Africa
Quintiles UK (Japan Holdings) Limited	United Kingdom
Quintiles Ukraine	Ukraine
Quintiles West Africa Limited	Ghana
Radar Acquisition Blocker, Inc.	Delaware
Redsite Limited	United Kingdom
Reportive SA	France
RX India LLC	Delaware
Schwarzeck Verlag GmbH	Germany
Secureconsent, LLC	Delaware
Shanghai IMS Market Research Co. Ltd.	China
Source Informatics Limited	United Kingdom
Spartan Leasing Corporation	Delaware
Statfinn Oy	Finland
STI Technologies Limited	Canada
Strategique Sante	France
Targeted Molecular Diagnostics, LLC	Illinois
Tarius A/S	Denmark
Temas Srl - Società Unipersonale	Italy
TforG Connect BVBA	Belgium
TforG Support NV	Belgium
The Amundsen Group , Inc.	Massachusetts
Themis Limited	United Kingdom
UAB IQVIA Commercial	Lithuania
Valucentric Global Services GMBH	Switzerland
Valuemedica Research, LLC	Delaware
VCG&A Inc.	Massachusetts
VCG-Bio, Inc.	Delaware
Vivacity Health Pty. Ltd.	Australia

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-213927, 333-193212, 333-188431) and Form S-3 (No. 333-218209) of IQVIA Holdings Inc. of our report dated February 18, 2020 relating to the financial statements, financial statement schedules and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP
Raleigh, North Carolina
February 18, 2020

**CERTIFICATION OF PERIODIC REPORT UNDER SECTION 302 OF
THE SARBANES-OXLEY ACT OF 2002**

I, Ari Bousbib, certify that:

1. I have reviewed this annual report on Form 10-K of IQVIA Holdings Inc. (the “registrant”);
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant’s other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant’s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant’s fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant’s internal control over financial reporting; and
5. The registrant’s other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant’s auditors and the audit committee of the registrant’s board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant’s ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant’s internal control over financial reporting.

Date: February 18, 2020

/s/ Ari Bousbib

Ari Bousbib
Chairman, Chief Executive Officer and President
(Principal Executive Officer)

**CERTIFICATION OF PERIODIC REPORT UNDER SECTION 302 OF
THE SARBANES-OXLEY ACT OF 2002**

I, Michael R. McDonnell, certify that:

1. I have reviewed this annual report on Form 10-K of IQVIA Holdings Inc. (the “registrant”);
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant’s other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant’s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant’s fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant’s internal control over financial reporting; and
5. The registrant’s other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant’s auditors and the audit committee of the registrant’s board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant’s ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant’s internal control over financial reporting.

Date: February 18, 2020

/s/ Michael R. McDonnell

Michael R. McDonnell
Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO SECTION 906
OF THE SARBANES-OXLEY ACT OF 2002**

I, Ari Bousbib, Chairman, Chief Executive Officer and President of IQVIA Holdings Inc. (the “Company”), do hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

- (1) the Annual Report on Form 10-K of the Company for the year ended December 31, 2019 (the “Report”) fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company for the periods presented therein.

Date: February 18, 2020

/s/ Ari Bousbib

Ari Bousbib
Chairman, Chief Executive Officer and President
(Principal Executive Officer)

This certification is being furnished solely to accompany the Report pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, and shall not be deemed “filed” by the Company for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and shall not be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Report, irrespective of any general incorporation language contained in such filing.

A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO SECTION 906
OF THE SARBANES-OXLEY ACT OF 2002**

I, Michael R. McDonnell, Executive Vice President and Chief Financial Officer of IQVIA Holdings Inc. (the “Company”), do hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

- (1) the Annual Report on Form 10-K of the Company for the year ended December 31, 2019 (the “Report”) fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company for the periods presented therein.

Date: February 18, 2020

/s/ Michael R. McDonnell

Michael R. McDonnell
Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

This certification is being furnished solely to accompany the Report pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, and shall not be deemed “filed” by the Company for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and shall not be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Report, irrespective of any general incorporation language contained in such filing.

A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.