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, 2021

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	**27-1341991**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**

4820 Emperor Blvd., Durham, North Carolina 27703
(Address of principal executive office and Zip Code)

(919) 998-2000
(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	☒	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
Emerging growth 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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

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 30, 2021, the last business day of the registrant's most recently completed second quarter, was approximately $45.7 billion.

As of February 7, 2022, there were approximately 190,485,264 shares of the registrant's common stock outstanding.

Portions of the registrant's Proxy Statement for the 2022 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, 2021.

IQVIA HOLDINGS INC.

FORM 10-K

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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," "forecasts," "plans," "projects," "should," "targets," "will" and similar words and expressions, and variations and negatives of these words are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words.

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 business disruptions caused by natural disasters, pandemics such as the COVID-19 (coronavirus) outbreak, including any variants, and the public health policy responses to the outbreak, international conflict or other disruptions outside of our control; our ability to accurately model or forecast the impact of the spread and/or containment of COVID-19, including any variants, among other sources of business interruption, on our operations and financial results; 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; the market for our services may not grow as we expect; we may be unable to successfully develop and market new services or enter new markets; 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 future changes to data protection and privacy laws; breaches or misuse of our or our outsourcing partners' security or communications systems; 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; hardware and software failures, delays in the operation of our computer and communications systems or the failure to implement system enhancements; 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; government regulators or our customers may limit the scope of prescription or withdraw products from the market, and government regulators may impose new regulatory requirements or may adopt new regulations affecting the biopharmaceutical industry; 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 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 Annual Report on 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 clinical research services to the life sciences industry. IQVIA creates intelligent connections across all aspects of healthcare through its analytics, transformative technology, big data resources and extensive domain expertise. IQVIA Connected Intelligence™ delivers powerful insights with speed and agility — enabling customers to accelerate the clinical development and commercialization of innovative medical treatments that improve healthcare outcomes for patients. With approximately 79,000 employees, we conduct operations in more than 100 countries.

We are a global leader in protecting individual patient privacy. We use a wide variety of privacy-enhancing technologies and safeguards to protect individual privacy while generating and analyzing information on a scale that helps healthcare stakeholders identify disease patterns and correlate with the precise treatment path and therapy needed for better outcomes. Our insights and execution capabilities 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.

We have one of the largest and most comprehensive collections of healthcare information in the world, which includes more than 1.2 billion 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 approximately 56 petabytes of proprietary data sourced from approximately 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 2020 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 approximately 100 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 93 markets, and information about treatments and outcomes on more than 1.2 billion unique non-identified patient records 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 79,000 employees*** across the globe, including over 28,000 Technology & Analytics Solutions employees, approximately 42,000 Research & Development Solutions employees and approximately 6,000 Contract Sales & Medical Solutions employees.

- ***Integration of information, analytics, technology, and domain expertise through Connected Intelligence*****,** 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 $285 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 approximately $150 billion in 2021. Of that amount, we estimate that our addressable opportunity (clinical development spending excluding preclinical spending) was approximately $81 billion. The portion of this addressable opportunity that was outsourced in 2021, based on our estimates, was approximately $39 billion;

- ***Real-World Evidence and connected health:*** Total addressable market of approximately $60 billion based on 2021 sales that consists of tightly coupled life sciences and healthcare markets. First, the life sciences market for Real-World Evidence of approximately $20 billion includes post-launch evidence generation, market access, and patient engagement services. 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 $75 billion based on 2021 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 sales 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 $1.42 trillion in revenue in 2021. According to our research, revenue growth in the life sciences industry globally is expected to range from 3% to 6% between 2022 and 2026. 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 2026. The growth of emerging markets demonstrates their strategic importance to global life sciences organizations along with the emergence of local and regional companies with similar operational and informational needs. We expect all of these organizations to apply a high degree of sophistication to their commercial operations in these countries, especially as some begin to emerge as sources of original innovative products. 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 300 new molecular entities ("NMEs") are expected to be approved between 2022 and 2026, or 60 per year compared to 53 per year on average during the past decade. 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, Connected Intelligence 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 through our Connected Intelligence 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 93 markets and information about treatments and outcomes on more than 1.2 billion unique non-identified patient records. By connecting this intelligence, 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 and leverage our global presence. We have a diversified base of over 10,000 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 $285 billion in 2021. 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 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.

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.

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 commercial and clinical processes, including customer relationship management ("CRM"), performance management, real-world evidence generation, compliance and safety reporting, incentive compensation, territory alignment, roster management, call planning, multi-channel marketing, 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 1.2 billion unique non-identified patient records 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 tracks over 23 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.

Clinical Laboratory Services. We provide our clients globally scaled end-to-end clinical trial laboratory and research services. Our offerings include 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.

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.

Decentralized Clinical 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, account 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 2021, 2020, or 2019. For the year ended December 31, 2021 the largest client based on its percentage of total company revenue contributed approximately 7%.

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, Panalgo, Cognizant Technology Solutions, Covance Inc., Deloitte, Evidera (now part of Thermo Fisher Scientific Inc.), GfK, LexisNexis Risk Solutions, IBM, Infosys, Kantar Health (now part of Cerner Corporation), McKinsey, Nielsen, OptumInsight, PAREXEL International Corporation, Press Ganey, RTI Health Solutions, PRA Health Sciences (now part of ICON plc), 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 clinical 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. (now part of Thermo Fisher Scientific Inc.), PRA Health Sciences (now part of ICON plc), 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, Eversana and UDG Healthcare plc. Outside of the United States, Contract Sales & Medical Solutions typically competes against single country or more regionally focused service providers, such as UDG Healthcare plc, Syneos Health, EPS Corporation and CMIC HOLDINGS Co., Ltd.

Sustainability

We are committed to sustainable environmental, social and governance ("ESG") practices that further our corporate purpose of helping our clients improve healthcare outcomes for patients. Our sustainable business practices are organized under three pillars — People, Public and Planet. For further information on our ESG program, achievements, and goals, see our 2021 Environmental, Social, and Governance Report (the "2021 ESG Report"), which will be available on our website at https://www.iqvia.com/about-us/corporate-responsibility. Information in the 2021 ESG Report is not incorporated by reference in, and does not form part of, this Annual Report on Form 10-K. To facilitate the disclosure of comparable, consistent, and reliable ESG information, the 2021 ESG Report will be aligned with the Sustainability Accounting Standards Board ("SASB") and the Global Reporting Initiative ("GRI") reporting frameworks by including therein and reporting against their respective reporting standards indexes. The 2021 ESG Report also discusses our climate-related risks and opportunities in accordance with the recommended disclosures of Task Force on Climate-related Financial Disclosures ("TCFD").

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, Labor 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.

Data Privacy

Patient health information is among the most sensitive of personal information, and it is critically important that information about an individual's healthcare is properly protected from inappropriate access, use and disclosure. Real world evidence -- information that allows us to examine actual practices and outcomes -- is essential to increase access to care, improve outcomes, and lower costs. IQVIA uses a wide variety of privacy-enhancing technologies and safeguards to protect individual privacy while generating and analyzing information on a scale that helps healthcare stakeholders identify disease patterns and correlate with the precise treatment path and therapy needed for better outcomes. We employ a wide variety of methods to manage privacy requirements, including:

- governance, frameworks, models and training to promote good decision making and accountability;
- a layered approach to privacy and security management to avoid a single point of failure;
- ongoing evaluation of privacy and security practices to promote continuous improvement;
- use of technical, administrative, physical and organizational safeguards and controls;
- collaboration with data suppliers and trusted third parties for our syndicated market research and analytics offerings to remove identifiable information or employ effective encryption or other techniques to render information non-identified before data is delivered to us; and
- work with leading researchers, policy makers, thought leaders and others in a variety of fields relevant to the application of effective privacy and security practices, including statistical, epidemiological and cryptographic sciences, legal, information security and compliance, and privacy.

We are an industry leader in de-identifying data. Our capabilities allow us to render data non-identified while still maintaining data utility, thus protecting privacy while still advancing innovation. Not only do we make use of de-identification techniques with respect to the data we hold, but we also share our expertise in this area with policymakers, regulators and others to help them understand de-identification methodologies and practical considerations to avoid re-identification risk.

We operate in more than 100 countries around the world, many of which have data protection and privacy laws and regulations based on similar core principles, (e.g., openness, accountability, security safeguards, etc.). We apply those principles globally and augment our practices to address local laws, contractual obligations and other data privacy requirements.

Our Global Privacy team, led by our Global Chief Privacy Officer, is comprised of privacy professionals and privacy law experts who drive our strategy and develop and manage our policies and standards. The Global Privacy team provides subject matter expertise related to the proper management of all data types. In addition, our Global Privacy team liaises with our Legal, IT, Information Security and other teams so that privacy requirements are addressed in technology, contracting, offerings and other business activities.

The IQVIA Privacy Policy (the "Privacy Policy") is our foundational privacy policy. It explains how, when applicable, we collect, hold, use and disclose personal information, including that of our personnel, consumers, healthcare professionals, patients, medical research subjects, clinical investigators, customers, suppliers, vendors, business partners and investors. You can find the Privacy Policy on our website at https://www.iqvia.com/about-us/privacy/privacy-policy. Information in the Privacy Policy is not incorporated by reference in, and does not form part of, this Annual Report on Form 10-K.

Cybersecurity

We employ an array of data security technologies, processes and methods across our infrastructure to protect systems and sensitive information from unauthorized access. IQVIA maintains comprehensive identity and access management practices (e.g., roles and access privileges for each user; multi-factor authentication, privileged user accounts, single sign-on, user lifecycle management) and employs a variety of security information and event management tools.

We developed, maintain and utilize a global integrated information security framework to guide our practices, based on relevant industry frameworks and laws, including, but not limited to NIST, GxP, HITRUST, the ISO 27000 family, COBIT, GDPR, and HIPAA. The framework consists of policies, standards, procedures, work instructions and documentation. Information is classified into four categories to help individuals apply the right level of controls and safeguards to information, applications and systems.

Our cybersecurity program focuses on all areas of our business, including cloud-based environments, data centers, devices used by employees and contractors, facilities, networks, applications, vendors, disaster recovery / business continuity and controls and safeguards enabled through business processes and tools. We continuously monitor for threats and unauthorized access. We draw on the knowledge and insight of external cybersecurity experts and vendors, and employ an array of third party tools to secure IQVIA information infrastructure and protect systems and information from unauthorized access.

Non-technical safeguards also play an important role in our cybersecurity program. We provide various training programs and tools to employees so they can avoid risky practices and help us promptly identify potential or actual issues. We also have global incident response procedures, global service tools to log incidents and issues for investigation, and an ethics line to report concerns and follow-up on matters already reported.

The Global Information Security team, led by our Chief Information Security Officer, develops and implements our strategy, as well as monitors systems and devices for risks and threats. Our global data centers and IT controls are included in an annual SOC2 Type II attestation program carried out by an independent audit firm who performs control testing and issue reports. Our set of SOC2 controls is aligned with ISO27001 specification and therefore provide equivalent level of assurance on a global level.

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.

Human Capital

Overview. Our approximately 79,000 employees help us drive our business success and achieve our ambition to advance human health. We are a diverse global team that shares a passion for collaboration and solving complex problems. Our workforce is comprised of a wide variety of professionals, including clinicians, data scientists, epidemiologists, and more.

Our culture is one in which employees are encouraged to apply their insight, curiosity, and intellectual courage across everything they do. The way we manage our people and the programs we offer our employees reflect our commitment to fostering this culture of empowerment and engagement.

Each one of our employees provide value, no matter where they sit within the organization. We are committed to creating an environment where all employees are respected and heard, where people from all backgrounds can contribute to and share in our growth, and where opportunity and advancement is available to everyone.

Attracting, developing, and retaining a talented workforce is essential to the success of our business and the realization of our purpose. Investments in our people are motivated by our desire to have an engaged and connected workforce. This results in high productivity and better results for IQVIA. In an industry as competitive as ours, we also recognize that employees who feel supported contribute to higher retention and recruitment rates.

Board Oversight of Human Capital Management. Our board of directors (the "Board") receives regular updates on key human capital metrics, including recruitment and attrition rates, talent development data, and diversity statistics related to hiring, promotion and our overall workforce.

The Board also devotes significant time to leadership development and succession planning at the executive level and provides guidance on important decisions in each of these areas. The Leadership Development and Compensation Committee of the Board has primary responsibility for succession planning for the chief executive officer and oversight of succession planning for senior leadership.

Human Capital Management Strategy. Our employees are critical to our continued success and are a core element of our long-term strategy. Senior management is responsible for ensuring that our initiatives, policies, and processes reflect and reinforce our desired corporate culture, which we believe supports successful human capital management. Our human capital management strategy is built on three fundamental focus areas:

- **Recruitment**. We consider a range of qualified candidates for all positions. We hire qualified individuals with a variety of backgrounds and experiences from both within and outside the organization for positions at all levels.

- **Development & Progression**. We are committed to having a diverse pipeline of talent moving up in our organization and providing opportunities for all employees to develop within their current role as well as towards their next role. We do this by encouraging mentoring and establishing support networks as well as by providing tools to help employees map out and achieve their career goals.

- **Retention**. We seek to develop a working environment where employees feel supported and want to stay. To increase employee engagement and retention, we consistently seek feedback from employees through surveys and focus groups and develop meaningful initiatives and programs to respond to their needs.

Employee Engagement. In 2021, we completed two company-wide employee surveys. The surveys provided a valuable opportunity to hear the perspectives of our workforce around the world, and was especially important during the largely remote working environment caused by the continuing pandemic. Maintaining regular and open channels of dialogue with employees and receiving and responding to their feedback with actionable and meaningful initiatives is critical to our human capital management strategy.

We received more than 54,000 responses in each of our 2021 surveys. The participation rate was an average of 76% across both surveys. In the latest survey, 85% of respondents indicated a favorable view of the Company's employee engagement, which is 4 points better than our prior year survey, and 4 points above the Fortune 500 company benchmark. Other areas where we saw favorable scores were: Employees feeling they are acquiring the knowledge and skills needed to be effective in their jobs (85%); employees would recommend IQVIA as a great place to work (84%); and employees feeling they are part of a team (85%).

Diversity and Inclusion. Our commitment to diversity and inclusion ("D&I") is reflected in the various policies, programs, training and support we offer, including our Employee Resource Groups, manager diversity and inclusion training and our highly diverse global workforce. This is a foundation of our approach to human capital. We create this culture for employees regardless of gender, race, color, creed, religion, marital status, age, national origin or ancestry, physical or mental disability, medical condition, veteran status, citizenship, sexual orientation, gender identity or any other protected group status. In 2021, we continued to build on our existing programs. In recognition of the growth of our D&I programs globally, we hired a new senior leader of our D&I program. Although D&I is everyone's responsibility, the objective of this new role is to have a dedicated resource accountable for evolving and strengthening our D&I strategy over the coming years.

Our global workforce operates in over 100 countries and represents approximately 90 different ethnicities. In the United States, approximately 62% of our employees identify as white and approximately 38% identify as Non-White, including 11% who identify as Black or African American. Approximately 60% of our employees globally are female and approximately 51% of employees worldwide at a manager level are female.

Our growing network of Employee Resource Groups (ERGs) provides a framework for employees to connect and collaborate with colleagues with similar interests. These groups support our values and business goals and foster the diverse thinking required for innovation. They provide a forum for the exchange of ideas and opportunities for mentoring and professional development.

There are seven global ERG, including two new ERGs we added in 2021: the Black Leadership Network and the Multi-Faith Network. All are employee-led, voluntary, and open to every employee. Each ERG has a mission that is aligned to our vision, values, and core operating principles.

- **Race, Ethnicity, and Cultural Heritage Group (REACH)**: aims to create a supportive and collaborative community for IQVIA employees who represent racial, ethnic and cultural minorities across the globe.

- **Emerging Professionals Network (EPN)**: builds community among leaders and emerging professionals through networking, personal development and volunteerism in order to pave the way for IQVIA's future growth and success.

- **Lesbian, Gay, Bisexual and Transgender (LGBT+) Group**: supports the ability for all people at IQVIA to be their authentic selves by fostering an inclusive, equal, and inspiring culture for LGBT+ employees.

- **Veterans Employee Resource Group (VERG)**: offers opportunities and support through the IQVIA community to its veteran and active service members and family.

- **Women Inspired Network (WIN)**: fosters a corporate culture that inspires women to excel in their careers at IQVIA and within the biopharma industry.

- **Black Leadership Network (BLN)** is open to all employees and aims to maintain an inclusive community that supports professional development, knowledge sharing, collaboration and business success for Black employees.

- **Multi-Faith Network (MFN)** fosters a culture of openness and diversity and provides a place where IQVIA employees can connect with people of different faiths or no faith for mutual support.

In 2021, we grew our ERG membership to more than 4,000 participants worldwide, a 60% increase in membership over the past year, with multiple chapters being established across the globe.

Employee Well-being. Investing in resources and incentives to promote the personal well-being of our employees and their families is an important way we take care of our people. As a digital healthcare company, we also use our own in-house technical expertise to develop online tools to enable our employees to access resources quickly and seamlessly.

We provide a variety of health and welfare benefit plans that are available to employees and their family members, based on their location and specific country regulations. Plans may include medical, dental, and vision coverage; telemedicine and on-site medical care; critical illness coverage; disability, accidental death and dismemberment, pet and life insurance; tuition reimbursement; identity theft protection; commuter benefits; matching gift programs; and locally relevant savings and retirement plans such as pensions and 401(k) plans.

We provide parental leave for all full-time employees for the birth or adoption of a child, with variability in leave time dependent on location. We also provide paid leave for other life matters including sick time, bereavement, jury duty, military service, and time off for voting, depending on country specific policies.

Beyond health and welfare benefits, many regions also offer employee wellness programs. In the United States, our “Healthy You” wellness program offers employees a range of wellness benefits, including free flu shots, teledoc services, nutrition counseling, tobacco cessation support and reimbursement for wellness-related expenses.

Our Employee Assistance Program (EAP) is available to 100% of our workforce worldwide, an increase of 37% from the prior year, which completed our roll out of our EAP to the remainder of our workforce.

Compensation and Benefits. IQVIA compensation programs support our overall strategy by linking employee compensation with both business and personal performance. This approach to compensation demonstrates our "pay for performance" philosophy, as well as our focus on providing compensation program that attract, retain and motivate and reward employees. In addition to the benefits described above, our compensation programs include base salaries, annual bonuses, and long-term incentive awards.

Talent and Learning. Helping our people grow, develop, and reach their full potential is a key component of our human capital management strategy. Nurturing talent is critical in a highly competitive industry, and it also keeps our employees motivated and engaged.

We invest in our employees' development throughout their careers at IQVIA through our various talent and learning initiatives. Our strategy is focused on supporting business growth, optimizing our offerings through enhanced digital tools, and building the future leaders of IQVIA. At the same time, we are working to transform the employee experience and evolve our performance management approach to be more responsive to our employees' experiences. Mirroring our overall culture, our approach to talent and learning is underpinned by the philosophy of empowerment, and we encourage all employees to take ownership of their careers.

We offer a suite of formal and informal learning opportunities, many which focus on business specific topics such as regulatory compliance, technology, analytics, clinical and therapy areas, and more. In 2021, we centralized all of our learning opportunities and provided access to all trainings to every employee worldwide through our Talent and Learning hub. Democratizing our training has given all employees a common, one-stop shop for all their talent and learning needs. There have been approximately 1 million visits to our Talent and Learning hub since its launch in mid-April 2021. The ease of access to training has resulted in the completion of approximately 1.45 million e-learning programs in various subjects, including technology, client-facing skills and project management skills.

We want our employees to have meaningful careers, and we are committed to the idea that career development is a result of growth through new experiences. To foster this growth, we engage employees on their purpose, strengths, and agility. We encourage employees to remain curious and flexible towards their career, exploring opportunities across the organization. Employees take ownership for their development in partnership with managers, mentors, and others. Similarly, performance management is driven by ongoing conversations about priorities, contributions and development.

In 2020, we introduced our Future Leaders Program, a robust training aimed to develop the next generation of leadership at IQVIA. In 2021, 85 attendees from 22 countries took part in the four-month virtual program, and nearly 150 employees have participated since the program's inception. Sessions consisted of live webinars co-led by senior executives, peer coaching, business projects and skills assessments. Feedback continues to be positive, with 90% of participants saying the program will help them become more effective leaders, and 92% saying they will apply what they have learned.

In 2021, we also piloted our Emerging Leaders Program, targeted to employees at the manager level. Our first cohort included more than 204 people from 36 countries. Business leaders and subject matter experts from across the organization taught online sessions on topics such as agility, collaboration, executive presence and decision making. In addition, participants received peer coaching, 360-degree assessments and individual development plans.

Health and Safety. Ensuring the health and safety of our employees is essential, whether they work in our corporate offices or labs. We strive to create a culture of safety so our employees can remain healthy and productive.

We incorporate environmental laws and regulations into our policies and procedures throughout our organization. At the corporate level, we have group certifications to ISO 14001:2015 and ISO 45001:2018. In accordance with both certifications, we have a robust, integrated Environmental, Health and Safety Management System (EHSMS) with supporting standard operating procedures in place, which demonstrates our commitment to continuous improvement. Under our EHSMS, all employees must actively participate in helping to maintain a safe, healthy, and secure work environment. Our Code of Conduct describes the obligations of employees to maintain such an environment, follow all applicable safety and security rules and complete required training.

Q^2 Solutions operates laboratories in the United States, United Kingdom, South Africa, Singapore, India, Japan, and China. Q^2 facilities are certified to ISO 14001:2015 and ISO 45001:2018. Depending on the location and services provided accreditation also will include ISO 14001, CAP ISO 15189, ISO 9001, NGSP Level 1, ANVISA, ISO45001, CDC Lipids, CLIA, MOH Certified Laboratory.

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 Annual Report on Form 10-K. 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.

Summary of Risk Factors

Below is a summary of some of the principal risks that could adversely affect our business, operations and financial results:

Risks Relating to Our Business

- Our business and operations may be adversely affected by the COVID-19 pandemic.
- The potential loss or delay of contracts could adversely affect our results.
- 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.
- Failure to meet productivity objectives under our internal business transformation initiatives could adversely impact our competitiveness and harm our operating results.
- If we are unsuccessful at investing in growth opportunities and are unable to develop and market new services or enter new markets, our growth, results of operations or financial condition could be adversely affected.
- 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.
- If we are unable to attract suitable investigators and patients for our clinical trials, our clinical development business might suffer.
- If we lose the services of key personnel or are unable to recruit additional qualified personnel, our business could be adversely affected.

Intellectual Property

- 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.
- Our success depends on our ability to protect our intellectual property rights.
- We may be subject to claims by others that we are infringing on their intellectual property rights.
- 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.

IT systems and Information

- Security breaches and unauthorized use of our IT systems and information could expose us, our clients, our data suppliers or others to risk of loss.
- We may experience challenges with the acquisition, development, enhancement or deployment of technology necessary for our business.
- 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.
- Data protection, privacy and similar laws restrict access, use and disclosure of personal information, and failure to comply with these laws could materially harm our business.

Client Risks

- Consolidation in the industries in which our clients operate may reduce the volume of services purchased by consolidated clients following an acquisition or merger.
- We may be adversely affected by client or therapeutic concentration.
- 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.

- 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, and we may be ethically bound to complete or wind down the clinical trial at our own expense.

Market Forces

- Disruptions in the credit and capital markets and unfavorable general economic conditions could negatively affect our business, results of operations and financial condition.
- Our effective income tax rate may fluctuate for a variety of reasons.
- Changes in accounting standards issued by the Financial Accounting Standards Board ("FASB") or other standard-setting bodies may adversely affect our financial statements.
- Due to the global nature of our business we are subject to international economic, political and other risks that could negatively affect our results of operations and financial condition.
- Climate change may have an impact on our business.

Liability Exposure

- Our Research & Development Solutions business could subject us to potential liability.
- Our Contract Sales & Medical Solutions business could result in liability to us if a drug causes harm to a patient.
- Our insurance may not cover all of our indemnification obligations and other liabilities associated with our operations.
- We may make mistakes in conducting a clinical trial that could negatively impact the usefulness of the clinical trial which could subject us to significant costs or liability.
- 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.

Risks Relating to Our Industry

- The biopharmaceutical services industry is highly competitive.
- 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.
- We may be affected by healthcare reform and potential additional reforms.
- Actions by government regulators or clients to limit a prescription's scope or withdraw an approved drug from the market could affect our business and result in a loss of revenues.
- If we do not keep pace with rapid technological changes, our services may become less competitive or obsolete.
- Laws restricting biopharmaceutical sales and marketing practices may adversely impact demand for our services.

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.
- Restrictive covenants in our other indebtedness may limit our flexibility in our current and future operations.
- Interest rate fluctuations and our ability to deduct interest expense may affect our results of operations and financial condition.
- 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.

Risks Related 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 operating results and share price may be volatile, which could cause the value of our stockholders' investments to decline.
- Our certificate of incorporation contains a provision renouncing any interest and expectancy in certain corporate opportunities identified by certain parties.

For a more complete discussion of the material risk facing our business, see below.

Risks Relating to Our Business

Our business and operations has been and may in the future be adversely affected by the novel coronavirus (COVID-19) pandemic.

The COVID-19 pandemic, and the various governmental, industry and consumer actions related thereto, had, and may continue to have, an adverse effect on our business, financial condition and results of operations. These effects have included, and may include in the future, a negative impact on the availability of our key personnel, temporary closures of our facilities or the facilities of our business partners, customers, suppliers, third party service providers or other vendors, an increased risk of customer defaults or delays in payments or purchasing decisions, and the interruption of domestic and global supply chains, distribution channels, liquidity and capital or financial markets.

As COVID-19, including any variants, continues to spread, we have and may in the future experience disruptions that could severely impact our business, including:

- closure or inaccessibility of clinical site locations;
- delays or difficulties in enrolling patients in our clinical trials and starting new clinical trials;
- delays or difficulties in clinical site initiation, including difficulties in recruiting clinical site investigators and clinical site staff;
- interruption of key clinical trial activities, such as clinical trial site monitoring, due to limitations on travel imposed or recommended by federal or state governments, employers and others;
- delays in receiving approval from local regulatory authorities to initiate our planned clinical trials;
- significant disruption in our businesses that rely on face-to-face interactions or are dependent on in-person gatherings, events or conferences; and
- significant and unpredictable reductions or increases in demand for certain of our offerings.

In addition, we have directed a substantial portion of our workforce to work from home while the outbreak persists in order to help minimize the risk of COVID-19 to our employees. Having a significant portion of our workforce working from home has caused an increased risk of loss of productivity, greater cybersecurity risk, and increased risk to our system of internal controls over financial reporting. To the extent global conditions improve, the duration and sustainability of any such improvements will be uncertain and continuing adverse impacts and/or the degree of improvement may vary by geography. The actions we take in response to any improvements in conditions, such as our return-to-office plans, may also vary by geography and by business and will likely be made with incomplete information. There is a risk that such actions may prove to be premature, incorrect or insufficient and could have a material and adverse impact on our business and results of operations.

Further, the effects of the pandemic may also increase our cost of capital or make additional capital more difficult or available only on terms less favorable to us.

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.

The COVID-19 pandemic, or a similar global event, could also exacerbate many of the above situations and cause delays, changes in scope or cancellation of our contracts. 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 service provider.

Some of our vendors have significant responsibility for the security of certain of our data centers and computer-based platforms or software-as-a-service (SaaS) applications upon which our businesses rely to host or process data or to perform various functions. 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, which include accelerating site start-up timelines and improving our customer buying experience, 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. 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 and clinical operations for life sciences companies (e.g., multi-channel marketing, marketing campaign management, customer relationship management, incentive compensation management, targeting and segmentation, performance management, site engagement payments, trial master file, risk based monitoring, in-home nursing and other services, clinical trial management and decentralized trials 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, retention, security, transfer 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 (collectively, "Privacy Laws"). 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. Privacy Laws in the United States and around the world are designed to ensure that information about an individual’s healthcare is properly protected from inappropriate access, use and disclosure. Privacy Laws 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, data localization and similar national, state/provincial and local laws. In the EU, personal data includes any information that relates to an identifiable natural person. Health information about an identifiable person carries additional obligations under EU law, 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).

We have established frameworks, models, processes and technologies to manage privacy and security for many data types, from a variety of sources, and under a myriad of Privacy Laws. 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 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 established programs have been (or are at risk of being) declared invalid (such as the EU-U.S. Privacy Shield framework that operated for several years but was struck down by the European Court of Justice in July, 2020), 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 new Privacy Laws or modifications to existing Privacy Laws, including by amendment, replacement or interpretation through judicial or administrative decisions. New or modified Privacy Laws might, among other things, require us to implement new security measures and processes or bring within the scope of the Privacy Law other data not currently regulated, each of which may require substantial expenditures or limit our ability to offer some of our services. Additionally, changes in Privacy Laws 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 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.

Many Privacy 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 the drug development pipeline 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 2021, 2020 and 2019, 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 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, public health emergencies and pandemics such as the COVID-19, including any variants, 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.

Climate change may have an impact on our business.

While we have determined that, at this time, climate change does not present a material risk to our business given the nature of our activities, we continue to evaluate and mitigate our business risks associated with climate change, and we recognize that there are inherent climate-related risks wherever business is conducted. Any of our office or IT systems locations may be vulnerable to the adverse effects of climate change. Furthermore, climate change may impact patients in our clinical trials and our employees, particularly where they work remotely. Changing market dynamics, global policy developments, and the increasing frequency and impact of extreme weather events on critical infrastructure have the potential to disrupt our business, the business of our third-party suppliers, and the business of our customers, and may cause us to experience losses and additional costs to maintain or resume 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 experience sustained labor shortages and are unable to recruit additional qualified personnel, or we are required to substantially increase wage rates to attract or retain employees, 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, including highly technical specialties such as clinical research associates, project managers and technology developers, and in the locations in which we operate. This increase in competition and shortage of qualified personnel in certain specialty areas may make it more difficult to hire and retain our key employees and could result in substantial increased costs, such as increased wage rates to attract and retain employees. The departure of our key employees, or our inability to continue to identify, attract and retain qualified personnel or replace 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, 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. Other factors that may affect our effective income tax rate include, but are not limited to:

- changes in the value of deferred tax assets and liabilities;
- changes in tax laws in various jurisdictions;
- 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 Cuts and Jobs Act enacted in 2017 ("Tax Act"). In the course of our business, there are many transactions and calculations where the ultimate tax determination is uncertain which may require the use of estimates and significant judgement to account for their impact on the effective income tax rate in our consolidated financial statements. As the regulations and guidance evolve with respect to the Tax Act, our results may differ from previous estimates and may materially affect our consolidated financial statements.

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 income taxes, 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.

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. 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 clinical 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 Fifth Amended and Restated 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 Fifth Amended and Restated 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 Fifth Amended and Restated 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 Fifth Amended and Restated 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 swaps. We have entered into and will continue to enter into 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 swaps may be 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 discontinuation of LIBOR for various currencies. 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. In March 2021, the ICE Benchmark Administration announced that it would cease to publish LIBOR for U.S. Dollar borrowings after June 30, 2023. The Alternative Reference Rates Committee convened by the Board of Governors of the Federal Reserve System has recommended the use of the Secured Overnight Funding Rate ("SOFR") as a replacement benchmark index for borrowings of U.S. Dollars. Our credit facilities will need to be amended to give effect to SOFR as the benchmark rate with respect to our U.S. Dollar-denominated term B loans. Market terms are still developing for loans and other products linked to SOFR, EURIBOR and other benchmark replacements and there can be no assurance that rates linked to SOFR, EURIBOR and other benchmark replacements or related administrative terms will be as favorable to us as those rates and terms under our existing credit facilities, derivatives and other contracts.

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 parties, 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 current or former 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, 2021, we had approximately 250 offices located in approximately 84 countries. Our executive headquarters are located adjacent to Research Triangle Park, North Carolina. 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. We believe that collectively our facilities are suitable and adequate for our present purposes. We continue to assess the impacts of COVID-19 on the suitability, adequacy, productive capacity and utilization of our existing principal physical properties, and we are in the process of evaluating the future state of our workforce practices, which may result in changes to our physical property needs.

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."

Holders of Record

On February 7, 2022, we had approximately 20 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 2021 or 2020. 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 2021.

Purchases of Equity Securities by the Issuer

On October 30, 2013, 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. The Board increased the stock repurchase authorization under the Repurchase Program with respect to the repurchase of the Company's common stock by $600 million, $1.5 billion, $2.0 billion, $1.5 billion, and $2.0 billion, in 2015, 2016, 2017, 2018, and 2019 respectively. On February 10, 2022, the Board increased the stock repurchase authorization under the Repurchase Program with respect to the repurchase of the Company's common stock by an additional $2.0 billion, which increased the total amount that has been authorized under the Repurchase Program to $9.725 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, 2021, we have repurchased a total of $6.8 billion of our securities under the Repurchase Program.

During the year ended December 31, 2021, we repurchased 1.7 million shares of our common stock for approximately $395 million under the Repurchase Program. 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, 2021, we had remaining authorization to repurchase up to approximately $0.5 billion of our common stock under the Repurchase Program. The February 10, 2022 $2.0 billion increase in the stock repurchase authorization, increased the remaining authorization to repurchase common stock under the Repurchase Program up to approximately $2.5 billion.

Since the Merger between Quintiles and IMS health, we have repurchased 67.4 million shares of our common stock at an average market price per share of $100.95 for an aggregate purchase price of $6.8 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, 2021 and the approximate dollar value of shares that may yet be purchased pursuant to the Repurchase Program.

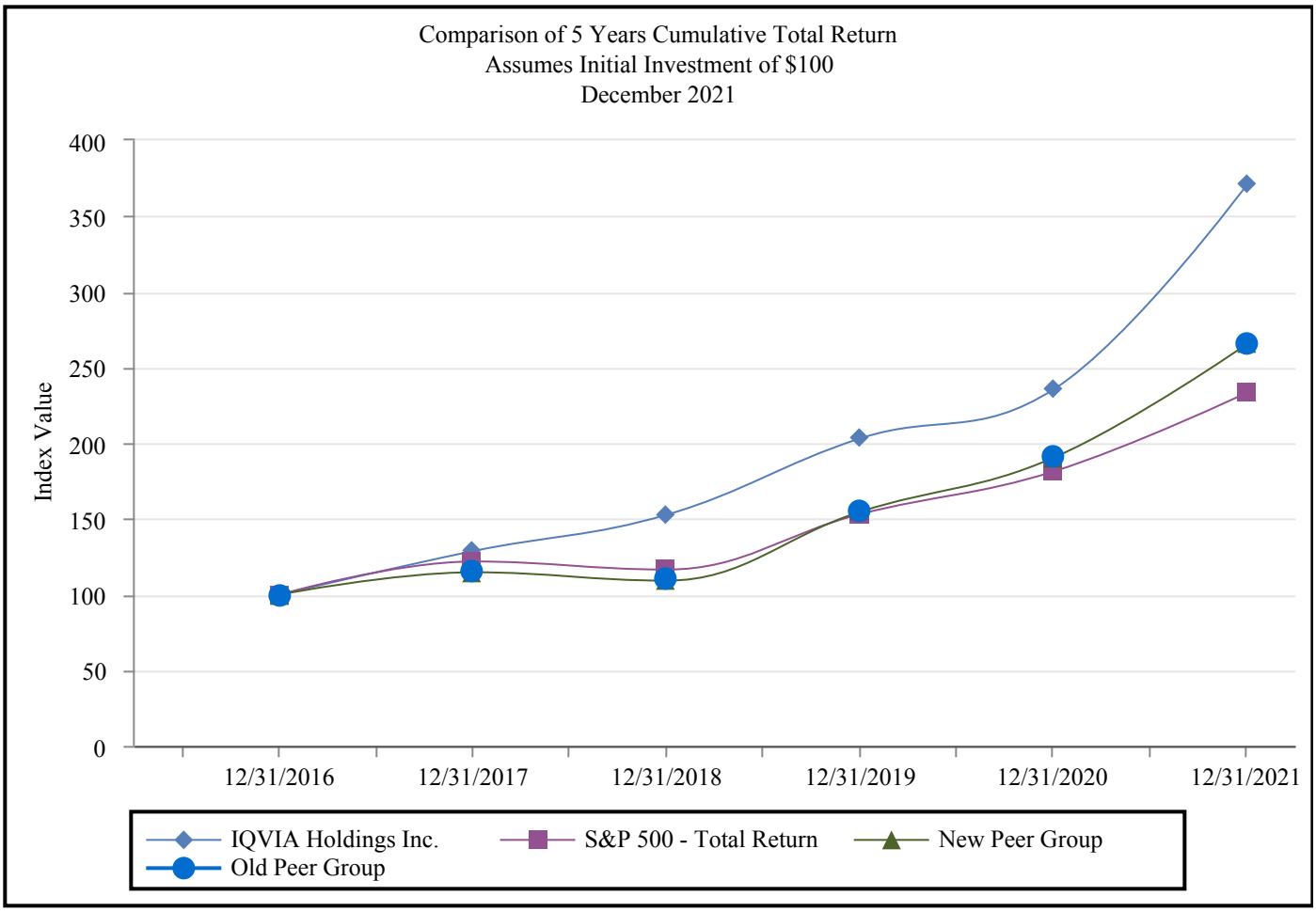
Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares That May Yet Be Purchased Under the Plans or Programs
	(in millions, except per share data)			
October 1, 2021 – October 31, 2021	0.1	$ 238.82	0.1	$ 667
November 1, 2021 – November 30, 2021	0.4	$ 254.38	0.4	$ 568
December 1, 2021 – December 31, 2021	0.2	$ 265.16	0.2	$ 523
	0.7		0.7	

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, 2016 through December 31, 2021 of the cumulative total return for our common stock, the Standard & Poor’s 500 Stock Index (“S&P 500”), our new peer group set forth below ("New Peer Group") and our old peer group set forth below ("Old Peer Group"). The New 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., Syneos Health (formerly INC Research Holdings), Thomson Reuters Corporation and Verisk Analytics, Inc. The difference between the New Peer Group and the Old Peer Group is that PRA Health Sciences, Inc. has been removed from the New Peer Group as it became part of ICON plc during the year ended December 31, 2021. The companies in our peer group are publicly traded information services, information technology or clinical 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, the New Peer Group and the Old Peer Group as of the close of market on December 31, 2016, assumes the reinvestments of dividends, if any. The S&P 500 and our New and Old Peer Groups are included for comparative purposes only. They do not necessarily reflect management’s opinion that the S&P 500 and our peer groups 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.



	12/31/2016	12/31/2017	12/31/2018	12/31/2019	12/31/2020	12/31/2021
IQVIA	$ 100	$ 129	$ 153	$ 203	$ 236	$ 371
S&P 500	$ 100	$ 122	$ 116	$ 153	$ 181	$ 233
New Peer Group	$ 100	$ 115	$ 109	$ 155	$ 190	$ 266
Old Peer Group	$ 100	$ 116	$ 111	$ 156	$ 191	$ 266

Item 6. [Reserved]

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 clinical research services to the life sciences industry. IQVIA creates intelligent connections across all aspects of healthcare through its analytics, transformative technology, big data resources and extensive domain expertise. IQVIA Connected Intelligence™ delivers powerful insights with speed and agility — enabling customers to accelerate the clinical development and commercialization of innovative medical treatments that improve healthcare outcomes for patients. With approximately 79,000 employees, we conduct operations in more than 100 countries.

We are a global leader in protecting individual patient privacy. We use a wide variety of privacy-enhancing technologies and safeguards to protect individual privacy while generating and analyzing information on a scale that helps healthcare stakeholders identify disease patterns and correlate with the precise treatment path and therapy needed for better outcomes. Our insights and execution capabilities 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.

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 insights 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 Opportunity”.

Overview of the Impact of COVID-19

During 2020, the COVID-19 pandemic disrupted the pace of our clinical trials and offerings that rely on face-to-face interactions, but, at the same time, it accelerated change in the industry and created demand for new services. The pandemic resulted in the delay but not cancellation of a number of existing and planned clinical trials, both because many clinical trials were slowed or temporarily paused and because many planned clinical trials did not begin as scheduled as they were crowded out by clinical trials for COVID-19 vaccines and other therapies. During 2021, we experienced an acceleration in business momentum as these delayed clinical trial activities began or restarted, which contributed to our financial results for the year.

Throughout the past year and into 2022, we have worked on a substantial number of COVID-related projects. COVID-specific work currently does not represent a material amount of our backlog and is executed over shorter timelines than other therapeutic work, though we do anticipate that this work will continue through 2022 and potentially into 2023 and beyond. There will be a need for vaccines for multiple manufacturers to meet global demand, new vaccines for emerging variants of the virus, alternative vaccines needed as a result of adverse safety events, quality issues, or manufacturing delays, novel treatment programs that are targeted at specific populations and conditions, and vaccine safety monitoring studies.

The pandemic has also affected our business strategy in a number of ways. One of the most significant impacts on our Research & Development Solutions business, has been the acceleration of decentralized clinical trials. Decentralized clinical trials combine the use of remote technologies and field-based services to enable portions of a clinical trial to be conducted away from an investigator site. This approach reduces the burden on patients of having to travel to and from investigator sites frequently and allows trials to continue to be conducted even during periods of limited access to investigator sites. While the decentralized clinical trial opportunity was identified before COVID-19, we saw how critical those capabilities were during the pandemic and accelerated their development accordingly. We invested in the use of remote technologies, expanded our relationships with local laboratories and healthcare providers, and established a virtual network of investigators and care professionals.

We also took the opportunity presented by the pandemic to completely rethink and revolutionize our workplace and in 2021 we implemented the IQVIA Future of Work program. This program was designed to address employee feedback for more flexibility, and it will facilitate approximately 80% of our employees working in flexible arrangements, reducing our physical footprint and the employee commute impact on the environment. To facilitate this transition, we made investments in real estate to reconfigure our office space to install the most efficient work arrangements and in technology to support our employees and ensure that we can innovate, collaborate and grow successfully.

The Company continues to maintain strong liquidity. As of December 31, 2021, cash and cash equivalents were $1,366 million and the Company had $100 million drawn under its $1.5 billion revolving credit facility. As of December 31, 2021, the Company was in compliance with the financial covenants under its debt agreements in all material respects and does not have material uncertainty about ongoing ability to meet the covenants of our credit arrangements.

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, 2021 and 2020. 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 2021, approximately 35% of our revenues were denominated in currencies other than the United States dollar, which represents approximately 60 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 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 2020 and 2019, refer to our Annual Report on Form 10-K for the fiscal year ended December 31, 2020 filed on February 12, 2021.

Revenues

	Year Ended December 31,			Change			
				2021 vs. 2020		2020 vs. 2019	
(dollars in millions)	2021	2020	2019	$	%	$	%
Revenues	$ 13,874	$ 11,359	$ 11,088	$ 2,515	22.1 %	$ 271	2.4 %

2021 compared to 2020

In 2021, our revenues increased $2,515 million, or 22.1%, as compared to 2020. This increase was comprised of constant currency revenue growth of approximately $2,398 million, or 21.1%, reflecting a $604 million increase in Technology & Analytics Solutions, a $1,752 million increase in Research & Development Solutions, and a $42 million increase in Contract Sales & Medical Solutions.

Costs of Revenue, exclusive of Depreciation and Amortization

	Year Ended December 31,		
(dollars in millions)	2021	2020	2019
Costs of revenue, exclusive of depreciation and amortization	$ 9,233	$ 7,500	$ 7,300
% of revenues	66.5 %	66.0 %	65.8 %

2021 compared to 2020

When compared to 2020, costs of revenue, exclusive of depreciation and amortization, in 2021 increased $1,733 million, or 23.1%. This increase included a constant currency increase of approximately $1,606 million, or 21.4%, comprised of a $314 million increase in Technology & Analytics Solutions, a $1,267 million increase in Research & Development Solutions, and a $25 million increase in Contract Sales & Medical Solutions.

As a percent of revenues, costs of revenue, exclusive of depreciation and amortization in 2021 increased compared to 2020.

Selling, General and Administrative Expenses

	Year Ended December 31,		
(dollars in millions)	2021	2020	2019
Selling, general and administrative expenses	$ 1,964	$ 1,789	$ 1,734
% of revenues	14.2 %	15.7 %	15.6 %

2021 compared to 2020

The $175 million increase in selling, general and administrative expenses in 2021 as compared to 2020 included a constant currency increase of approximately $151 million, or 8.4%, comprised of a $42 million increase in Technology & Analytics Solutions, a $32 million increase in Research & Development Solutions, a $(1) million decrease in Contract Sales & Medical Solutions, and a $78 million increase in general corporate and unallocated expenses.

Depreciation and Amortization

(dollars in millions)	Year Ended December 31, 2021	2020	2019
Depreciation and amortization	$ 1,264	$ 1,287	$ 1,202
% of revenues	9.1 %	11.3 %	10.8 %

The $(23) million decrease in depreciation and amortization in 2021 as compared to 2020 was primarily due to certain intangible assets from the merger between Quintiles and IMS Health becoming fully amortized in 2021, offset by higher intangible asset balances as a result of acquisitions occurring in 2020 and 2021, increased amortization due to higher capitalized software balances, and accelerated amortization related to intangibles impacted by the Company's acquisition of Quest's non-controlling interest in Q^2 Solutions.

Restructuring Costs

(in millions)	Year Ended December 31, 2021	2020	2019
Restructuring costs	$ 20	$ 52	$ 75

The restructuring costs incurred were due to ongoing efforts to streamline our global operations. The remaining actions under these plans are expected to occur throughout 2022 and are expected to consist of consolidating functional activities, eliminating redundant positions, and aligning resources with customer requirements.

Interest Income and Interest Expense

(in millions)	Year Ended December 31, 2021	2020	2019
Interest income	$ (6)	$ (6)	$ (9)
Interest expense	$ 375	$ 416	$ 447

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

Interest expense during 2021 was lower than 2020 due to lower interest rates attributed to lower LIBOR rates, the refinancing of our existing term A loans and the redemption of our 3.250% senior notes due 2025, which was offset by the interest expense on the issuance of our 1.750% senior notes due 2026 and 2.250% senior notes due 2029. See Note 10 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K for more information on these transactions.

Loss on Extinguishment of Debt

(in millions)	Year Ended December 31, 2021	2020	2019
Loss on extinguishment of debt	$ 26	$ 13	$ 24

During 2021, we recognized loss on extinguishment of debt of $26 million for fees and expenses incurred related to the refinancing of our 3.250% senior notes due 2025 and Prior Credit Agreement as discussed further in Note 10 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

During 2020, we recognized loss on extinguishment of debt of $13 million for fees and expenses incurred related to the refinancing of our 3.500% senior notes due 2024 as discussed further in Note 10 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

Other Income, Net

(in millions)	Year Ended December 31, 2021	2020	2019
Other income, net	$ (130)	$ (65)	$ (37)

Other income, net for 2021 increased compared to 2020 primarily due to foreign currency gain.

Income Tax Expense

(dollars in millions)	Year Ended December 31, 2021	2020	2019
Income tax expense	$ 163	$ 72	$ 116
Effective income tax rate	14.5 %	19.3 %	33.0 %

In 2021, we recorded a benefit of $29 million related to a 2020 U.S. Federal tax return position associated with Foreign Derived Intangible Income ("FDII") and Global Intangible Low-Taxed Income ("GILTI") tax credits. Also in 2021, we recorded a $9 million tax expense as a result of the U.S. Treasury Department issuing final regulations on Foreign Tax Credits.

In 2020, the U.S. Treasury Department issued final regulations regarding FDII and GILTI. We have determined we will elect the GILTI high tax exception as allowed by the final regulations and have amended our 2018 U.S. Federal consolidated income tax returns and plan to amend our 2019 US Federal consolidated income tax returns resulting in a favorable impact of $26 million, which we recorded in 2020.

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 enacted by the U.S. government on December 22, 2017. 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. The final regulations related to the transition tax did not have a material impact. As a result of the proposed FDII guidance, which was subsequently finalized in 2020, we reversed the tax benefit originally recorded in 2018 by recording a tax expense of $25 million for this impact in 2019.

Equity in Earnings (Losses) of Unconsolidated Affiliates

(in millions)	Year Ended December 31, 2021	2020	2019
Equity in earnings (losses) of unconsolidated affiliates	$ 6	$ 7	$ (9)

Equity in earnings (losses) of unconsolidated affiliates remained relatively consistent in 2021 compared to 2020.

Net Income Attributable to Non-controlling Interests

(in millions)	Year Ended December 31, 2021	2020	2019
Net income attributable to non-controlling interests	$ (5)	$ (29)	$ (36)

Net income attributable to non-controlling interests included Quest's interest in Q^2 Solutions. On April 1, 2021 the Company acquired the 40% non-controlling interest in Q^2 Solutions from Quest which resulted in a decrease in the net income attributable to non-controlling interests in 2021 compared to 2020. See Note 13 to our audited consolidated financial statements included elsewhere in this Annual Report on Form 10-K for additional details regarding this transaction.

Segment Results of Operations

Revenues and profit by segment are as follows:

	Segment Revenues			Segment Profit		
(in millions)	**2021**	**2020**	**2019**	**2021**	**2020**	**2019**
Technology & Analytics Solutions	$ 5,534	$ 4,858	$ 4,486	$ 1,458	$ 1,216	$ 1,101
Research & Development Solutions	7,556	5,760	5,788	1,476	1,048	1,141
Contract Sales & Medical Solutions	784	741	814	75	57	52
Total	13,874	11,359	11,088	3,009	2,321	2,294
General corporate and unallocated				(332)	(251)	(240)
Depreciation and amortization				(1,264)	(1,287)	(1,202)
Restructuring costs				(20)	(52)	(75)
Consolidated	$ 13,874	$ 11,359	$ 11,088	$ 1,393	$ 731	$ 777

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 related to integration activities and acquisitions. We also do not allocate depreciation and amortization or impairment charges to our segments.

Technology & Analytics Solutions

	Year Ended December 31,			Change			
(dollars in millions)	**2021**	**2020**	**2019**	**2021 vs. 2020**		**2020 vs. 2019**	
Revenues	$ 5,534	$ 4,858	$ 4,486	$ 676	13.9 %	$ 372	8.3 %
Costs of revenue, exclusive of depreciation and amortization	3,278	2,900	2,663	378	13.0	237	8.9
Selling, general and administrative expenses	798	742	722	56	7.5	20	2.8
Segment profit	$ 1,458	$ 1,216	$ 1,101	$ 242	19.9 %	$ 115	10.4 %

Revenues

2021 compared to 2020

Technology & Analytics Solutions' revenues were $5,534 million in 2021, an increase of $676 million, or 13.9%, over 2020. This increase was comprised of constant currency revenue growth of approximately $604 million, or 12.4%, reflecting revenue growth across all regions. The revenue growth was driven by higher technology, real-world and analytical services and COVID-19 related work.

Costs of Revenue, exclusive of Depreciation and Amortization

2021 compared to 2020

Technology & Analytics Solutions' costs of revenue, exclusive of depreciation and amortization, were $3,278 million in 2021, an increase of $378 million over 2020. This increase was comprised of constant currency increase of approximately $314 million, or 10.8%, reflecting an increase in compensation and related expenses to support revenue growth.

Selling, General and Administrative Expenses

2021 compared to 2020

Technology & Analytics Solutions' selling, general and administrative expenses increased $56 million in 2021 as compared to 2020. This increase was comprised of a constant currency increase of approximately $42 million, or 5.7%, reflecting an increase in compensation and related expenses.

Research & Development Solutions

	Year Ended December 31,			Change			
(dollars in millions)	**2021**	**2020**	**2019**	**2021 vs. 2020**		**2020 vs. 2019**	
Revenues	$ 7,556	$ 5,760	$ 5,788	$ 1,796	31.2 %	$ (28)	(0.5)%
Costs of revenue, exclusive of depreciation and amortization	5,303	3,974	3,936	1,329	33.4	38	1.0
Selling, general and administrative expenses	777	738	711	39	5.3	27	3.8
Segment profit	$ 1,476	$ 1,048	$ 1,141	$ 428	40.8 %	$ (93)	(8.2)%

Backlog

Research & Development Solutions contracted backlog increased from $22.6 billion as of December 31, 2020 to $24.8 billion as of December 31, 2021 and we expect approximately $7.0 billion of this backlog to convert to revenue in the next 12 months. Contracted backlog was $19.0 billion as of December 31, 2019.

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.

We believe that backlog is an indicator of future revenues but the timing of revenue 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

2021 compared to 2020

Research & Development Solutions' revenues were $7,556 million in 2021, an increase of $1,796 million, or 31.2%, over 2020. This increase was comprised of constant currency revenue growth of approximately $1,752 million, or 30.4%, reflecting revenue growth across all regions. The revenue growth was primarily the result of volume-related increases in clinical services and lab testing, including incremental revenue from large COVID-19 vaccine clinical trials.

Costs of Revenue, exclusive of Depreciation and Amortization

2021 compared to 2020

Research & Development Solutions' costs of revenue, exclusive of depreciation and amortization, increased $1,329 million, or 33.4%, in 2021 as compared to 2020. This increase included a constant currency increase of approximately $1,267 million, or 31.9%, reflecting an increase in compensation and related expenses as a result of volume-related increases in clinical services and lab testing.

Selling, General and Administrative Expenses

2021 compared to 2020

Research & Development Solutions' selling, general and administrative expenses increased $39 million, or 5.3%, in 2021 as compared to 2020, which included a constant currency increase of approximately $32 million, or 4.3%, reflecting an increase in compensation and related expenses.

Contract Sales & Medical Solutions

	Year Ended December 31,			Change			
(dollars in millions)	**2021**	**2020**	**2019**	**2021 vs. 2020**		**2020 vs. 2019**	
Revenues	$ 784	$ 741	$ 814	$ 43	5.8 %	$ (73)	(9.0)%
Costs of revenue, exclusive of depreciation and amortization	652	626	701	26	4.2	(75)	(10.7)
Selling, general and administrative expenses	57	58	61	(1)	(1.7)	(3)	(4.9)
Segment profit	$ 75	$ 57	$ 52	$ 18	31.6 %	$ 5	9.6 %

Revenues

2021 compared to 2020

Contract Sales & Medical Solutions' revenues were $784 million in 2021, an increase of $43 million, or 5.8%, over 2020. This increase was comprised of a constant currency revenue growth of approximately $42 million, or 5.7%, reflecting a volume increase primarily in the Americas and Asia-Pacific regions.

Costs of Revenue, exclusive of Depreciation and Amortization

2021 compared to 2020

Contract Sales & Medical Solutions' costs of revenue, exclusive of depreciation and amortization, increased $26 million, or 4.2%, in 2021 as compared to 2020. This increase included a constant currency increase of approximately $25 million, or 4.0%, reflecting an increase in compensation and related expenses.

Selling, General and Administrative Expenses

2021 compared to 2020

Contract Sales & Medical Solutions' selling, general and administrative expenses decreased $(1) million, or (1.7)%, in 2021 as compared to 2020. This decrease included a constant currency decrease of approximately $(1) million, or (1.7)%, reflecting a decrease in compensation and related expenses.

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, 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 $1,366 million as of December 31, 2021 ($385 million of which was in the United States), a decrease from $1,814 million as of December 31, 2020.

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, capital expenditures, contractual obligations, 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 10, 2022 the Board increased the stock repurchase authorization under the Repurchase Program with respect to the repurchase of the Company's common stock by an additional $2.0 billion, which increased the total amount that has been authorized under the Repurchase Program to $9.725 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, 2021, the Company had remaining authorization to repurchase up to approximately $0.5 billion of its common stock under the Repurchase Program. The February 10, 2022 $2.0 billion increase in the stock repurchase authorization, increased the remaining authorization to repurchase common stock under the Repurchase Program up to approximately $2.5 billion. 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, 2021, we had $12.2 billion of total indebtedness, excluding $1.4 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, 2021, we believe we were in compliance with our restrictive covenants in all material respects.

Senior Secured Credit Facilities

As of December 31, 2021, the Fifth Amended and Restated Credit Agreement, as amended (the "Fifth Amended and Restated Credit Agreement") provided financing through several senior secured credit facilities (collectively, the "senior secured credit facilities") of up to approximately $7,140 million, which consisted of $5,740 million principal amounts of debt outstanding and $1,400 million of available borrowing capacity on the revolving credit facility and standby letters of credit, with a total capacity of $1,500 million. 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 Fifth Amended and Restated Credit Agreement mature in August 2026, while the term B loans under the Fifth Amended and Restated 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. In addition, beginning with fiscal year ending December 31, 2017, we were required to apply 50% of excess cash flow (as defined in the Fifth Amended and Restated 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, 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, 2021, no additional amounts of revolving loans were available under the receivables financing facility.

Years ended December 31, 2021, 2020 and 2019

Cash Flow from Operating Activities

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Net cash provided by operating activities	**$ 2,942**	$ 1,959	$ 1,417

2021 compared to 2020

Cash provided by operating activities increased $983 million in 2021 as compared to 2020. The increase is primarily due to an increase in cash-related net income ($762 million), an increase in advanced billings ($411 million), a decrease in prepaid expenses and other assets ($131 million) and the timing of income tax and other payables ($81 million), offset by a decrease in accounts receivable and unbilled services ($393 million) and the timing of accounts payable and accrued expenses ($9 million).

Cash Flow from Investing Activities

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Net cash used in investing activities	**$ (2,103)**	$ (796)	$ (1,190)

2021 compared to 2020

Cash used in investing activities increased $1,307 million in 2021 as compared to 2020. The increase was primarily driven by more cash used for the acquisition of businesses, net of cash acquired ($1,281 million), acquisitions of property, equipment, and software ($24 million), lower net payments received from unconsolidated affiliates ($15 million) and an increase in purchase of marketable securities ($1 million), offset by an increase in net proceeds from sale of equity securities ($7 million), and other ($7 million).

Cash Flow from Financing Activities

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Net cash used in financing activities	**$ (1,235)**	$ (217)	$ (276)

2021 compared to 2020

Cash used in financing activities increased $1,018 million in 2021 as compared to 2020, primarily due to an increase in debt payments ($1,227 million), cash payments for the Company's acquisition of Quest's non-controlling interest in Q^2 Solutions ($758 million), an increase in cash payments on contingent consideration and deferred purchase price accruals ($20 million) and an increase in cash payments related to employee stock option plans ($15 million), offset by a decrease in cash used in repayments of revolving credit facilities, net of proceeds ($595 million), a decrease in cash used to repurchase common stock ($41 million), an increase in cash provided by proceeds from debt issuances, net of payment of debt issuance costs ($353 million) and a decrease in cash distributions to non-controlling interests ($13 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 material off-balance sheet arrangements.

Contractual Obligations and Commitments

Below is a summary of our future payment commitments by year under contractual obligations as of December 31, 2021:

(in millions)	2022	2023-2024	2025-2026	Thereafter	Total
Long-term debt, including interest(1)	$ 394	$ 3,053	$ 6,207	$ 3,883	$ 13,537
Operating leases	143	200	103	48	494
Finance leases	10	20	20	201	251
Data acquisition	657	619	265	2	1,543
Purchase obligations(2)	13	8	3	1	25
Commitments to unconsolidated affiliates(3)	—	—	—	—	—
Benefit obligations(4)	33	28	33	81	175
Uncertain income tax positions(5)	21	25	12	2	60
Total	$ 1,271	$ 3,953	$ 6,643	$ 4,218	$ 16,085

(1) Interest payments on our debt are based on the interest rates in effect on December 31, 2021.

(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 $139 million in private equity funds. As of December 31, 2021, we have funded approximately $91 million of these commitments and we have approximately $48 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 2022 for our funded pension benefit plans. We made cash contributions totaling approximately $29 million to our defined benefit plans in 2021, and we estimate that we will make contributions totaling approximately $33 million to our defined benefit plans in 2022. 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 2022.

(5) As of December 31, 2021, our liability related to uncertain income tax positions was approximately $131 million, $71 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 and Estimates

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

The provision for income taxes includes federal, state, local and foreign taxes. Income taxes are accounted for under the asset and liability method. Deferred tax assets and liabilities are recognized for the estimated future tax consequences of temporary differences between the financial statement carrying amounts and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the year in which the temporary differences are expected to be recovered or settled. We record U.S. deferred taxes based on the Federal corporate income tax rate of 21%, We account for tax related to GILTI as a period cost when incurred. 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, 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 and Goodwill

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 and 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 purchase price over the fair value of the net assets acquired, known as goodwill. The recoverability of goodwill is evaluated annually for impairment, or if and when events or circumstances indicate a possible impairment. We perform our annual goodwill impairment evaluation as of July 31. The impairment analysis requires significant judgments, estimates and assumptions, including those related to macroeconomic conditions, industry and market considerations, cost factors, financial performance, fair value history and other company specific events. For the years ended December 31, 2021, 2020 and 2019, the Company determined that there was no impairment of goodwill.

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. 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.

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. The Company records the expense amount of these awards based on its estimates of the likelihood that the various performance targets will be achieved. The estimates are assessed on a quarterly basis.

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 60 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. 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 currency hedged in 2021 was the British Pound.

The contractual value of our foreign exchange derivative instruments, all of which were foreign exchange forward contracts, was approximately $110 million as of December 31, 2021. 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 was $11 million as of December 31, 2021. 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 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 2021 by approximately $94 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, 2021, these borrowings (net of original issue discount) were €5,227 million ($5,929 million). A hypothetical 10% decrease in the value of the United States dollar would lead to a potential loss in fair value of $593 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, 2021, we had approximately $6.3 billion of variable rate indebtedness and interest rate swaps with a notional value of $1.8 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 $5.8 million per year.

Marketable Securities

As of December 31, 2021, 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, 2021, the fair value of these investments was $145 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 $15 million as of December 31, 2021.

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, 2021. 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, 2021, 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, 2021 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which appears herein.

/s/ Ari Bousbib	/s/ Ronald E. Bruehlman
Ari Bousbib	Ronald E. Bruehlman
Chairman and Chief Executive Officer	*Executive Vice President and Chief Financial Officer*
(Principal Executive Officer*)*	(Principal Financial Officer)

February 16, 2022

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, 2021 and 2020, and the related consolidated statements of income, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2021, 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, 2021, 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, 2021 and 2020, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2021 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, 2021, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the COSO.

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, 2021, is $7,556 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 16, 2022

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, 2021	2020	2019
Revenues	**$ 13,874**	$ 11,359	$ 11,088
Costs of revenue, exclusive of depreciation and amortization	**9,233**	7,500	7,300
Selling, general and administrative expenses	**1,964**	1,789	1,734
Depreciation and amortization	**1,264**	1,287	1,202
Restructuring costs	**20**	52	75
Income from operations	**1,393**	731	777
Interest income	**(6)**	(6)	(9)
Interest expense	**375**	416	447
Loss on extinguishment of debt	**26**	13	24
Other income, net	**(130)**	(65)	(37)
Income before income taxes and equity in earnings (losses) of unconsolidated affiliates	**1,128**	373	352
Income tax expense	**163**	72	116
Income before equity in earnings (losses) of unconsolidated affiliates	**965**	301	236
Equity in earnings (losses) of unconsolidated affiliates	**6**	7	(9)
Net income	**971**	308	227
Net income attributable to non-controlling interests	**(5)**	(29)	(36)
Net income attributable to IQVIA Holdings Inc.	**$ 966**	$ 279	$ 191
Earnings per share attributable to common stockholders:			
Basic	**$ 5.05**	$ 1.46	$ 0.98
Diluted	**$ 4.95**	$ 1.43	$ 0.96
Weighted average common shares outstanding:			
Basic	**191.4**	191.3	195.1
Diluted	**195.0**	195.0	199.6

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

IQVIA HOLDINGS INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(in millions)	Year Ended December 31, 2021	2020	2019
Net income	**$ 971**	$ 308	$ 227
Comprehensive income adjustments:			
Unrealized gains (losses) on derivative instruments, net of income tax expense (benefit) of $2, $(10) and $4	**9**	(30)	(15)
Defined benefit plan adjustments, net of income tax expense (benefit) of $21, $(15) and $5	**69**	(54)	(30)
Foreign currency translation, net of income tax expense (benefit) of $116, $(145) and $(30)	**(281)**	183	(39)
Reclassification adjustments:			
Losses (gains) on derivative instruments included in net income, net of income tax benefit of $4, $3 and $—	**12**	10	(1)
Comprehensive income	**780**	417	142
Comprehensive income attributable to non-controlling interests	**(5)**	(32)	(38)
Comprehensive income attributable to IQVIA Holdings Inc.	**$ 775**	$ 385	$ 104

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, 2021	December 31, 2020
ASSETS		
Cash and cash equivalents	**$ 1,366**	$ 1,814
Trade accounts receivable and unbilled services, net	**2,551**	2,410
Prepaid expenses	**156**	159
Income taxes receivable	**58**	56
Investments in debt, equity and other securities	**111**	88
Other current assets and receivables	**521**	563
Total current assets	**4,763**	5,090
Property and equipment, net	**497**	482
Operating lease right-of-use assets	**406**	471
Investments in debt, equity and other securities	**76**	78
Investments in unconsolidated affiliates	**88**	84
Goodwill	**13,301**	12,654
Other identifiable intangibles, net	**4,943**	5,205
Deferred income taxes	**124**	114
Deposits and other assets	**491**	386
Total assets	**$ 24,689**	$ 24,564
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable and accrued expenses	**$ 2,981**	$ 2,813
Unearned income	**1,825**	1,252
Income taxes payable	**137**	102
Current portion of long-term debt	**91**	149
Other current liabilities	**207**	242
Total current liabilities	**5,241**	4,558
Long-term debt, less current portion	**12,034**	12,384
Deferred income taxes	**410**	338
Operating lease liabilities	**313**	371
Other liabilities	**649**	633
Total liabilities	**18,647**	18,284
Commitments and contingencies (Note 1 and 12)		
Stockholders' equity:		
Common stock and additional paid-in capital, 400.0 shares authorized as of December 31, 2021 and 2020, $0.01 par value, 255.8 shares issued and 190.6 shares outstanding as of December 31, 2021; 254.7 shares issued and 191.2 shares outstanding as of December 31, 2020	**10,777**	11,095
Retained earnings	**2,243**	1,277
Treasury stock, at cost, 65.2 and 63.5 shares as of December 31, 2021 and 2020, respectively	**(6,572)**	(6,166)
Accumulated other comprehensive loss	**(406)**	(205)
Equity attributable to IQVIA Holdings Inc.'s stockholders	**6,042**	6,001
Non-controlling interests	**—**	279
Total stockholders' equity	**6,042**	6,280
Total liabilities and stockholders' equity	**$ 24,689**	$ 24,564

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, 2021	2020	2019
Operating activities:			
Net income	**$ 971**	$ 308	$ 227
Adjustments to reconcile net income to cash provided by operating activities:			
Depreciation and amortization	**1,264**	1,287	1,202
Amortization of debt issuance costs and discount	**17**	18	13
Stock-based compensation	**170**	95	146
Loss on disposals of property and equipment, net	**—**	—	1
(Earnings) loss from unconsolidated affiliates	**(6)**	(7)	9
Gain on investments, net	**(16)**	(25)	(43)
Benefit from deferred income taxes	**(138)**	(176)	(157)
Changes in operating assets and liabilities:			
Accounts receivable and unbilled services	**(138)**	255	(122)
Prepaid expenses and other assets	**(15)**	(146)	(92)
Accounts payable and accrued expenses	**244**	253	240
Unearned income	**591**	180	(2)
Income taxes payable and other liabilities	**(2)**	(83)	(5)
Net cash provided by operating activities	**2,942**	1,959	1,417
Investing activities:			
Acquisition of property, equipment and software	**(640)**	(616)	(582)
Acquisition of businesses, net of cash acquired	**(1,458)**	(177)	(588)
Purchases of marketable securities, net	**(10)**	(9)	(3)
Investments in unconsolidated affiliates, net of payments received	**(5)**	10	—
Proceeds from sale of (investments in) equity securities	**5**	(2)	(22)
Other	**5**	(2)	5
Net cash used in investing activities	**(2,103)**	(796)	(1,190)
Financing activities:			
Proceeds from issuance of debt	**1,951**	1,591	1,900
Payment of debt issuance costs	**(40)**	(33)	(47)
Repayment of debt	**(2,091)**	(864)	(899)
Proceeds from revolving credit facility	**810**	1,250	2,522
Repayment of revolving credit facility	**(600)**	(1,635)	(2,776)
(Payments) proceeds related to employee stock option plans	**(59)**	(44)	11
Repurchase of common stock	**(406)**	(447)	(949)
Distributions to non-controlling interest, net	**—**	(13)	(18)
Acquisition of Quest's non-controlling interest	**(758)**	—	—
Contingent consideration and deferred purchase price payments	**(42)**	(22)	(20)
Net cash used in financing activities	**(1,235)**	(217)	(276)
Effect of foreign currency exchange rate changes on cash	**(52)**	31	(5)
(Decrease) increase in cash and cash equivalents	**(448)**	977	(54)
Cash and cash equivalents at beginning of period	**1,814**	837	891
Cash and cash equivalents at end of period	**$ 1,366**	$ 1,814	$ 837

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

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

(in millions)	Common Stock Shares	Treasury Stock Shares	Common Stock	Additional Paid-In Capital	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive (Loss) Income	Non-controlling Interests	Total
Balance, December 31, 2018	251.5	(54)	$ 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, net	—	—	—	—	—	—	—	(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	(60.7)	3	11,046	998	(5,733)	(311)	260	6,263
Issuance of common stock	1.7	—	—	(44)	—	—	—	—	(44)
Repurchase of common stock	—	(2.8)	—	—	—	(433)	—	—	(433)
Stock-based compensation	—	—	—	90	—	—	—	—	90
Distributions to non-controlling interest, net	—	—	—	—	—	—	—	(13)	(13)
Net income	—	—	—	—	279	—	—	29	308
Unrealized losses on derivative instruments, net of tax	—	—	—	—	—	—	(30)	—	(30)
Defined benefit plan adjustments, net of tax	—	—	—	—	—	—	(54)	—	(54)
Foreign currency translation, net of tax	—	—	—	—	—	—	180	3	183
Reclassification adjustments, net of tax	—	—	—	—	—	—	10	—	10
Balance, December 31, 2020	254.7	(63.5)	3	11,092	1,277	(6,166)	(205)	279	6,280
Issuance of common stock	**1.1**	—	—	**(59)**	—	—	—	—	**(59)**
Repurchase of common stock	—	**(1.7)**	—	—	—	**(406)**	—	—	**(406)**
Stock-based compensation	—	—	—	**157**	—	—	—	—	**157**
Acquisition of Quest's non-controlling interest, net of tax	—	—	—	**(416)**	—	—	**(10)**	**(284)**	**(710)**
Net income	—	—	—	—	**966**	—	—	**5**	**971**
Unrealized gain on derivative instruments, net of tax	—	—	—	—	—	—	**9**	—	**9**
Defined benefit plan adjustments, net of tax	—	—	—	—	—	—	**69**	—	**69**
Foreign currency translation, net of tax	—	—	—	—	—	—	**(281)**	—	**(281)**
Reclassification adjustments, net of tax	—	—	—	—	—	—	**12**	—	**12**
Balance, December 31, 2021	**255.8**	**(65.2)**	**$ 3**	**$ 10,774**	**$ 2,243**	**$ (6,572)**	**$ (406)**	**$ —**	**$ 6,042**

The accompanying notes are an integral part of these 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 clinical research services to the life sciences industry. IQVIA creates intelligent connections across all aspects of healthcare through its analytics, transformative technology, big data resources and extensive domain expertise. IQVIA Connected Intelligence™ delivers powerful insights with speed and agility — enabling customers to accelerate the clinical development and commercialization of innovative medical treatments that improve healthcare outcomes for patients. With approximately 79,000 employees, the Company conducts business in more than 100 countries.

IQVIA is a global leader in protecting individual patient privacy. The company uses a wide variety of privacy-enhancing technologies and safeguards to protect individual privacy while generating and analyzing information on a scale that helps healthcare stakeholders identify disease patterns and correlate with the precise treatment path and therapy needed for better outcomes. IQVIA's insights and execution capabilities 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.

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 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 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 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.

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. 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.

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, and 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 other 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 $211 million, $267 million and $196 million of amortization expense in 2021, 2020 and 2019, respectively, related to software and related assets.

The carrying values of property, equipment and intangible and other long-lived assets are reviewed for recoverability at the asset grouping level to determine 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 2021, 2020 and 2019.

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 salesforce 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, bonuses, 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 the Company's 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 our 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, are recorded at estimated 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

The provision for income taxes includes federal, state, local and foreign taxes. Income taxes are accounted for under the asset and liability method. Deferred tax assets and liabilities are recognized for the estimated future tax consequences of temporary differences between the financial statement carrying amounts and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the year in which the temporary differences are expected to be recovered or settled. The Company records U.S. deferred taxes based on the Federal corporate income tax rate of 21%. The Company accounts for tax related to Global Intangible Low-Taxed Income ("GILTI") as a period cost when incurred. 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, capital loss carryforwards, and income tax credits, would be realized. The Company records 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 determines 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 related to compound annual earnings per share ("EPS") growth and/or other internal performance measures based on the closing market price of the Company's common stock on the date of grant, and for performance awards related to relative total shareholder return ("TSR") based on a Monte Carlo simulation model.

Leases

The Company determines if an arrangement is a lease at inception and reassesses if there are changes in terms and conditions of the contract. Operating leases are included in operating lease right-of-use ("ROU") assets, other current liabilities, and operating lease liabilities on our consolidated balance sheets. Finance leases are included in deposits and other assets, other current liabilities, and other liabilities on our consolidated balance sheets. Lease assets and 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. Lease assets also include any lease payments made before lease commencement and initial direct costs and excludes lease incentives. 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. 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. 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, and the amount of compensation cost for future service that the Company has not yet recognized are assumed to be used to repurchase shares.

Investments in Unconsolidated Affiliates

The Company's investments in 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 are classified as investments in 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 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 shortfall is recorded in retained earnings.

Recently Issued Accounting Standards

Accounting pronouncements recently adopted

In March 2020, the FASB issued new accounting guidance that provides optional expedients and exceptions for applying GAAP to contract modifications and hedging relationships, subject to meeting certain criteria, that reference LIBOR or another rate that is expected to be discontinued. The new accounting guidance became effective for the Company as of March 12, 2020 through December 31, 2022. The Company adopted this new accounting guidance on January 1, 2021. The adoption of this new accounting guidance did not have a material effect on the Company's consolidated financial statements.

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 Company adopted this new accounting guidance on January 1, 2021. The adoption of this new accounting guidance did not have a material effect on the Company's 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 Company adopted this new accounting guidance on January 1, 2021. The adoption of this new accounting guidance did not have a material effect on the Company's consolidated financial statements.

Accounting pronouncements issued but not adopted as of December 31, 2021

In October 2021, the FASB issued new accounting guidance that requires contract assets and contract liabilities (i.e., deferred revenue) acquired in a business combination to be recognized and measured by the acquirer on the acquisition date in accordance with Accounting Standards Codification ("ASC") 606, Revenue from Contracts with Customers. Under current GAAP, an acquirer generally recognizes assets acquired and liabilities assumed in a business combination, including contract assets and contract liabilities arising from revenue contracts with customers and other similar contracts that are accounted for in accordance with ASC 606, at fair value on the acquisition date. Generally, this new guidance will result in the acquirer recognizing contract assets and contract liabilities at the same amounts recorded by the acquiree. The new accounting guidance will be effective for the Company on January 1, 2023, with early adoption permitted. The Company plans on adopting this new accounting guidance effective January 1, 2022. The impact of this guidance on the Company's consolidated financial statements will depend on the size and nature of future acquisitions.

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, 2021, 2020 and 2019:

	December 31, 2021			
(in millions)	**Technology & Analytics Solutions**	**Research & Development Solutions**	**Contract Sales & Medical Solutions**	**Total**
Revenues:				
Americas	$ 2,610	$ 3,887	$ 351	$ 6,848
Europe and Africa	2,282	1,899	176	4,357
Asia-Pacific	642	1,770	257	2,669
Total revenues	$ 5,534	$ 7,556	$ 784	$ 13,874

	December 31, 2020			
(in millions)	**Technology & Analytics Solutions**	**Research & Development Solutions**	**Contract Sales & Medical Solutions**	**Total**
Revenues:				
Americas	$ 2,413	$ 2,680	$ 326	$ 5,419
Europe and Africa	1,844	1,667	184	3,695
Asia-Pacific	601	1,413	231	2,245
Total revenues	$ 4,858	$ 5,760	$ 741	$ 11,359

(in millions)	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

No individual country, except for the United States, accounted for 10% or more of total revenues for the year ended December 31, 2021. For the year ended December 31, 2021, revenues in the United States accounted for approximately 34% of total revenues. No individual country, except for the United States and the United Kingdom, accounted for 10% or more of total revenues for the years ended December 31, 2020 and 2019. For the year ended December 31, 2020, revenues in the United States and the United Kingdom accounted for approximately 35% and 10% of total revenues, respectively. For the year ended December 31, 2019, revenues in the United States and the United Kingdom accounted for approximately 45% and 10% of total revenues, respectively.

No individual customer represented 10% or more of total revenues for the years ended December 31, 2021, 2020 and 2019.

Transaction Price Allocated to the Remaining Performance Obligations

As of December 31, 2021, approximately $27.2 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.

3. Trade Accounts Receivable, Unbilled Services and Unearned Income

Trade accounts receivables and unbilled services consist of the following:

(in millions)	December 31, 2021	2020
Billed	**$ 1,275**	$ 1,181
Unbilled services	**1,309**	1,263
Trade accounts receivable and unbilled services	**2,584**	2,444
Allowance for doubtful accounts	**(33)**	(34)
Trade accounts receivable and unbilled services, net	**$ 2,551**	$ 2,410

Unbilled services and unearned income was as follows:

(in millions)	December 31, 2021	2020	Change
Unbilled services	**$ 1,309**	$ 1,263	$ 46
Unearned income	**(1,825)**	(1,252)	(573)
Net balance	**$ (516)**	$ 11	$ (527)

Unbilled services, which is comprised of approximately 62% of unbilled receivables and 38% of contract assets as of December 31, 2021, increased by $46 million as compared to December 31, 2020. 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 $573 million over the same period resulting in a decrease of $527 million in the net balance of unbilled services and unearned income between December 31, 2021 and 2020. Decrease 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, 2021, 2020 and 2019.

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 income, net on the accompanying consolidated statements of income.

Long-term

The Company's long-term equity investments (except those accounted for under the equity method, those that result in consolidation of the investee and certain other investments) are measured at fair value and any changes in fair value are recognized in net income at the end of each reporting period. For equity investments that do not have readily determinable fair values and do not qualify for the existing practical expedient in ASC 820, Fair Value Measurement, to estimate fair value using the net asset value per share of the investment, the Company applies the measurement alternative and measures 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.

Unconsolidated Affiliates

The Company accounts for its investments in 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 unconsolidated affiliates:

	December 31,	
(in millions)	**2021**	**2020**
NovaQuest Pharma Opportunities Fund III, L.P. ("NQ Fund III")	**$ 7**	$ 7
NovaQuest Pharma Opportunities Fund IV, L.P. ("NQ Fund IV")	**12**	8
NovaQuest Pharma Opportunities Fund V, L.P. ("NQ Fund V")	**22**	17
NovaQuest Private Equity Fund I, L.P. ("NQ PE Fund I")	**7**	3
NostraData Pty Ltd. ("NostraData")	**18**	18
Inteliquet ("Inteliquet")	**—**	16
Helparound ("Helparound")	**3**	3
Longwood Fund V, L.P. ("Longwood")	**3**	1
Other	**16**	11
	$ 88	$ 84

Variable Interest Entities

As of December 31, 2021, 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	$ 7	$ 12
NQ Fund IV	12	14
NQ Fund V	22	51
NQ PE Fund I	7	8
Longwood	3	10
Other	5	9
	$ 56	$ 104

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 hedge certain forecasted foreign exchange cash flows arising from service contracts ("Service Contract Hedging"). It is the Company's policy to enter into foreign currency forward contracts 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 forward contracts for investment or speculative purposes. The principal currency hedged in 2021 was the British Pound.

Service Contract 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 September 2022.

As of December 31, 2021 and 2020, the Company had open Service Contract Hedging contracts to hedge certain forecasted foreign currency cash flow transactions occurring in 2022 and 2021 with notional amounts totaling $110 million and $70 million, respectively. For accounting purposes these hedges are considered highly effective. As of December 31, 2021 and 2020, the Company had recorded gross unrealized gains (losses) of $— million and $(3) million, and $5 million and $— million, respectively, related to these contracts. Upon expiration of the hedge instruments in 2021, 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 other liabilities on the accompanying consolidated balance sheets as of December 31, 2021 and 2020.

Interest Rate Risk Management

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

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 (see Note 10 for additional information). 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.

On March 27, 2020, the Company entered into an interest rate swap with a notional value of $1 billion in an effort to limit its exposure to changes in the variable interest rate on its Senior Secured Credit Facilities (see Note 10 for additional information). Interest on the swap began accruing on March 31, 2020 and the swap expires on March 31, 2023. The Company pays a fixed rate of 0.56% and receives a variable rate of interest equal to the one-month LIBOR on the swap.

On June 4, 2020, the Company entered into an interest rate swap with a notional value of $300 million in an effort to limit its exposure to changes in the variable interest rate on its Senior Secured Credit Facilities (see Note 10 for additional information). Interest on the swap began accruing on June 30, 2020 and the swap expires on June 28, 2024. The Company pays a fixed rate of 0.54% and receives a variable rate of interest equal to the three-month LIBOR on the swap.

The critical terms of the swaps are substantially the same as the underlying borrowings. These interest rate swaps are 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.

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 result in a total debt mix of approximately 63% fixed rate debt and 37% variable rate debt.

Net Investment Risk Management

As of December 31, 2021, the Company's foreign currency denominated debt balance (net of original issue discount) designated as a hedge of its net investment in certain foreign subsidiaries totaled €5,227 million ($5,929 million). The amount of foreign exchange gains (losses) related to the net investment hedge included in the cumulative translation adjustment component of AOCI was $475 million, $(561) million and $97 million for the years ended December 31, 2021, 2020 and 2019, respectively.

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

		December 31, 2021			December 31, 2020		
(in millions)	**Balance Sheet Classification**	**Assets**	**Liabilities**	**Notional**	**Assets**	**Liabilities**	**Notional**
Derivatives designated as hedging instruments:							
Foreign exchange forward contracts	Other current assets and liabilities	**$ —**	**3**	**$ 110**	$ 5	$ —	$ 70
Interest rate swaps	Other assets and liabilities	**4**	**24**	**1,800**	—	55	1,800
Derivatives not designated as hedging instruments:							
Interest rate swaps	Other liabilities	—	—	—	—	1	356
Total derivatives		**$ 4**	**$ 27**		$ 5	$ 56	

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

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Foreign exchange forward contracts	**$ (8)**	$ 1	$ 2
Interest rate derivatives	**35**	(28)	(22)
Total	**$ 27**	$ (27)	$ (20)

The Company expects approximately $23 million of pre-tax unrealized losses related to its foreign exchange contracts and interest rate derivatives included in AOCI as of December 31, 2021 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 the year ended December 31, 2021.

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 as of December 31, 2021 and 2020 due to their short-term nature. As of December 31, 2021 and 2020, the fair value of total debt approximated $12,255 million and $12,746 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, 2021:

(in millions)	**Level 1**	**Level 2**	**Level 3**	**Total**
Assets:				
Marketable securities	**$ 145**	**$ —**	**$ —**	**$ 145**
Derivatives	**—**	**4**	**—**	**4**
Total	**$ 145**	**$ 4**	**$ —**	**$ 149**
Liabilities:				
Derivatives	**$ —**	**$ 27**	**$ —**	**$ 27**
Contingent consideration	**—**	**—**	**76**	**76**
Total	**$ —**	**$ 27**	**$ 76**	**$ 103**

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, 2020:

(in millions)	**Level 1**	**Level 2**	**Level 3**	**Total**
Assets:				
Marketable securities	$ 122	$ —	$ —	$ 122
Derivatives	—	5	—	5
Total	$ 122	$ 5	$ —	$ 127
Liabilities:				
Derivatives	$ —	$ 56	$ —	$ 56
Contingent consideration	—	—	119	119
Total	$ —	$ 56	$ 119	$ 175

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. Based on the assessments of the probability of achieving specific targets, as of December 31, 2021 the Company has accrued approximately 72% of the maximum contingent consideration payments that could potentially become payable.

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

	Contingent Consideration		
(in millions)	**2021**	**2020**	**2019**
Balance as of January 1	**$ 119**	$ 113	$ 123
Business combinations	**39**	47	40
Contingent consideration paid	**(39)**	(22)	(46)
Revaluations included in earnings and foreign currency translation adjustments	**(43)**	(19)	(4)
Balance as of December 31	**$ 76**	$ 119	$ 113

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 income, net on the accompanying consolidated statements of income. A change in significant unobservable inputs above could result in a significantly higher or lower fair value measurement of contingent consideration.

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, when there is an observable event, and when a triggering event occurs, and goodwill and other 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, 2021, assets carried on the balance sheet and not remeasured to fair value on a recurring basis totaled approximately $18,374 million and were identified as Level 3. These assets are comprised of cost and equity method investments of $130 million, goodwill of $13,301 million and other identifiable intangibles, net of $4,943 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. On an annual basis, and if a triggering event occurs, 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 carrying amount. This includes a qualitative analysis of macroeconomic conditions, industry and market considerations, 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 carrying value for the respective reporting unit, the Company would then need to calculate the fair value of the reporting unit. If the reporting unit calculated fair value is less than the carrying amount, the Company would record an impairment charge for the difference, with the impairment charge not to exceed the carrying amount 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.

7. Property and Equipment

The major classes of property and equipment were as follows:

	December 31,	
(in millions)	**2021**	**2020**
Land, buildings and leasehold improvements	**$ 376**	$ 351
Equipment	**745**	657
Furniture and fixtures	**72**	76
Transportation equipment	**69**	71
Property and equipment, gross	**1,262**	1,155
Less accumulated depreciation	**(765)**	(673)
Property and equipment, net	**$ 497**	$ 482

Property and equipment depreciation expense was as follows:

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Depreciation expense	**$ 147**	$ 134	$ 128

8. Goodwill and Other Identifiable Intangible Assets

As of December 31, 2021, the Company has approximately $4,943 million of other identifiable intangible assets. Amortization expense associated with other identifiable definite-lived intangible assets was as follows:

(in millions)	Year Ended December 31, 2021	2020	2019
Amortization expense	**$ 1,117**	$ 1,153	$ 1,074

Estimated amortization expense for existing other identifiable intangible assets is expected to be approximately $826 million, $748 million, $651 million, $546 million and $409 million for the years ending December 31, 2022, 2023, 2024, 2025 and 2026, 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 other identifiable intangible assets:

	December 31, 2021			December 31, 2020		
(in millions)	Gross Amount	Accumulated Amortization	Net Amount	Gross Amount	Accumulated Amortization	Net Amount
Definite-lived other identifiable intangible assets:						
Client relationships and backlog	**$ 5,193**	**$ (2,024)**	**$ 3,169**	$ 5,095	$ (1,745)	$ 3,350
Trademarks, trade name and other	**550**	**(241)**	**309**	544	(212)	332
Databases	**1,889**	**(1,853)**	**36**	1,930	(1,629)	301
Software and related assets	**2,637**	**(1,213)**	**1,424**	2,109	(915)	1,194
Non-compete agreements	**17**	**(12)**	**5**	28	(18)	10
	$ 10,286	**$ (5,343)**	**$ 4,943**	$ 9,706	$ (4,519)	$ 5,187
Indefinite-lived other identifiable intangible assets:						
Trade name	**$ —**	**$ —**	**$ —**	$ 18	$ —	$ 18

The following is a summary of goodwill by segment for the years ended December 31, 2021 and 2020:

(in millions)	Technology & Analytics Solutions	Research & Development Solutions	Contract Sales & Medical Solutions	Consolidated
Balance as of December 31, 2019	$ 10,374	$ 1,646	$ 139	$ 12,159
Business combinations	86	29	—	115
Impact of foreign currency fluctuations and other	404	(29)	5	380
Balance as of December 31, 2020	10,864	1,646	144	12,654
Business combinations	**874**	**160**	**26**	**1,060**
Impact of foreign currency fluctuations and other	**(401)**	**(4)**	**(8)**	**(413)**
Balance as of December 31, 2021	**$ 11,337**	**$ 1,802**	**$ 162**	**$ 13,301**

There were no goodwill impairment losses for the years ended December 31, 2021, 2020 and 2019.

9. Accrued Expenses

Accrued expenses consist of the following:

(in millions)	December 31, 2021	December 31, 2020
Compensation, including bonuses, fringe benefits and payroll taxes	**$ 946**	$ 852
Restructuring	**30**	53
Interest	**56**	55
Client contract related	**884**	849
Professional fees	**102**	92
Contingent consideration and deferred purchase price	**31**	59
Other	**311**	272
	$ 2,360	$ 2,232

10. Credit Arrangements

The following is a summary of the Company's revolving credit facilities as of December 31, 2021:

Facility	Interest Rates
$1,500 million (revolving credit facility)	LIBOR in the relevant currency borrowed plus a margin of 1.25% as of December 31, 2021
$110 million (receivables financing facility)	LIBOR Market Index Rate (0.10% as of December 31, 2021) plus 0.90%

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

(dollars in millions)	December 31, 2021	December 31, 2020
Revolving Credit Facility due 2026:		
U.S. Dollar denominated borrowings—U.S. Dollar LIBOR at average floating rates of 1.35%	**$ 100**	$ —
Senior Secured Credit Facilities:		
Term A Loan due 2023—U.S. Dollar	**—**	728
Term A Loan due 2023—U.S. Dollar	**—**	766
Term A Loan due 2026—U.S. Dollar LIBOR at average floating rates of 1.47%	**1,415**	—
Term A Loan due 2023—Euro	**—**	400
Term A Loan due 2026—Euro LIBOR at average floating rates of 1.25%	**351**	—
Term B Loan due 2024—U.S. Dollar LIBOR at average floating rates of 1.85%	**510**	535
Term B Loan due 2024—Euro LIBOR at average floating rates of 2.00%	**1,242**	1,413
Term B Loan due 2025—U.S. Dollar LIBOR at average floating rates of 1.85%	**670**	726
Term B Loan due 2025—U.S. Dollar LIBOR at average floating rates of 1.97%	**860**	926
Term B Loan due 2025—Euro LIBOR at average floating rates of 2.00%	**592**	697
5.0% Senior Notes due 2027—U.S. Dollar denominated	**1,100**	1,100
5.0% Senior Notes due 2026—U.S. Dollar denominated	**1,050**	1,050
2.875% Senior Notes due 2025—Euro denominated	**476**	515
3.25% Senior Notes due 2025—Euro denominated	**—**	1,748
2.25% Senior Notes due 2028—Euro denominated	**817**	883
2.875% Senior Notes due 2028—Euro denominated	**807**	872
1.750% Senior Notes due 2026—Euro denominated	**624**	—
2.250% Senior Notes due 2029—Euro denominated	**1,021**	—
Receivables financing facility due 2022—U.S. Dollar LIBOR	**—**	240
Receivables financing facility due 2024—U.S. Dollar LIBOR at average floating rates of 1.00%	**550**	—
Principal amount of debt	**12,185**	12,600
Less: unamortized discount and debt issuance costs	**(60)**	(67)
Less: current portion	**(91)**	(149)
Long-term debt	**$ 12,034**	$ 12,384

Contractual maturities of long-term debt as of December 31, 2021 are as follows:

(in millions)		
2022	$	91
2023		91
2024		2,392
2025		2,690
2026		3,178
Thereafter		3,743
	$	12,185

Senior Secured Credit Facilities

2021 Financing Transactions

On August 25, 2021, we entered into Amendment No. 9 (the "Amendment") to the Company's Fourth Amended and Restated Credit Agreement (the "Prior Credit Agreement," and together with the Amendment, the "Fifth Amended and Restated Credit Agreement") to (i) extend the maturity of our revolving credit facility to 2026, (ii) refinance our existing term A loans with a new class of term A loans that mature in 2026 and (iii) add IQVIA RDS Inc. as a borrower under our various senior secured credit facilities (collectively, the "senior secured credit facilities"). In connection with this Amendment, we recognized a $2 million loss on extinguishment of debt, which includes fees and related expenses.

On September 14, 2021, we repaid $250 million of our term B loans under the senior secured credit facilities using the proceeds from the increased loans under our receivables financing facility.

As of December 31, 2021, the Company's Fifth Amended and Restated Credit Agreement provided financing through the senior secured credit facilities of up to approximately $7,140 million, which consisted of $5,740 million principal amounts of debt outstanding (as detailed in the table above), and $1,400 million of available borrowing capacity on the $1,500 million revolving credit facility and standby letters of credit. 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.

2020 Financing Transactions

As of December 31, 2020, the Prior Credit Agreement provided financing through the senior secured credit facilities of up to approximately $7,692 million, which consisted of $6,192 million principal amounts of debt outstanding (as detailed in the table above), $4 million of issued standby letters of credit and $1,496 million of available borrowing capacity on the revolving credit facility.

On March 11, 2020, the Company entered into Amendment No. 7 to the Prior Credit Agreement to borrow $900 million in additional U.S. Dollar denominated term A loans due 2023 (the "TLA-2 Loans") and, on March 30, 2020, entered into Amendment No. 8 to the Prior Credit Agreement to amend certain terms of the TLA-2 Loans. The TLA-2 Loans bear interest based on the U.S. Dollar LIBOR plus a margin ranging from 1.500% to 2.250%, with a U.S. Dollar LIBOR floor of 1.000% per annum. The proceeds from the TLA-2 Loans were used to repay outstanding revolving credit loans under the Company's senior secured credit facilities. On March 30, 2020, the Company prepaid $100 million of the TLA-2 loans.

Senior Notes

2021 Financing Transactions

On March 3, 2021, IQVIA Inc. (the "Issuer"), a wholly owned subsidiary of the Company, completed the issuance and sale of €1,450 million in gross proceeds of the Issuer's (i) €550 million aggregate principal amount of its 1.750% Senior Notes due 2026 (the "2026 Notes") and (ii) €900 million aggregate principal amount of its 2.250% Senior Notes due 2029 (the "2029 Notes" and, together with the 2026 Notes, the "Notes"). The Notes were issued pursuant to an Indenture, dated March 3, 2021, among the Issuer, U.S. Bank National Association, as trustee of the Notes, and certain subsidiaries of the Issuer as guarantors. The 2026 Notes are unsecured obligations of the Issuer, will mature on March 15, 2026 and bear interest at the rate of 1.750% per year, with interest payable semi-annually on March 15 and September 15 of each year, beginning on September 15, 2021. The 2029 Notes are unsecured obligations of the Issuer, will mature on March 15, 2029 and bear interest at the rate of 2.250% per year, with interest payable semi-annually on March 15 and September 15 of each year, beginning on September 15, 2021. The Issuer may redeem (i) the 2026 Notes prior to their final stated maturity, subject to a customary make-whole premium, at any time prior to March 15, 2023 (subject to a customary "equity claw" redemption right) and thereafter subject to a redemption premium declining from 0.875% to 0.000% and (ii) the 2029 Notes prior to their final stated maturity, subject to a customary make-whole premium, at any time prior to March 15, 2024 (subject to a customary "equity claw" redemption right) and thereafter subject to a redemption premium declining from 1.125% to 0.000%. The Issuer may choose to redeem the 2026 Notes and the 2029 Notes, either together or separately, on a non-ratable basis. The proceeds from the Notes offering were used to redeem all of the Issuer's outstanding 3.250% senior notes due 2025 (the "3.250% Notes"), including the payment of premiums in respect thereof and to pay fees and expenses related to the Notes offering. The Issuer's obligations with respect to the 3.250% Notes were discharged on the same day as the Issuer completed the issuance of the Notes. In connection with this transaction, we recognized a $24 million loss on extinguishment of debt, which includes fees and related expenses.

2020 Financing Transactions

On June 24, 2020, the Issuer completed the issuance and sale of €711 million in gross proceeds of the Issuer's 2.875% senior notes due 2028 (the "2.875% Notes"). The 2.875% Notes were issued pursuant to an Indenture, dated June 24, 2020, among the Issuer, U.S. Bank National Association, as trustee of the Notes, and certain subsidiaries of the Issuer as guarantors. The 2.875% Notes are unsecured obligations of the Issuer, will mature on June 15, 2028 and bear interest at the rate of 2.875% per year, with interest payable semiannually on June 15 and December 15 of each year, beginning on December 15, 2020. The Issuer may redeem the 2.875% Notes prior to their final stated maturity, subject to a customary make-whole premium, at any time prior to June 15, 2023 (subject to a customary "equity claw" redemption right) and thereafter subject to a redemption premium declining from 1.438% to 0.000%. The proceeds from the 2.875% Notes offering were used to redeem all of the Issuer's outstanding 3.500% senior notes due 2024 (the "3.500% Notes"), including the payment of premiums in respect thereof, to repay a portion of the existing borrowings under the Issuer's revolving credit facility and to pay fees and expenses related to the offering. The Issuer's obligations with respect to the 3.500% Notes were discharged on the same day as the Issuer completed the issuance of the 3.500% Notes, and the 3.500% Notes were redeemed on July 9, 2020.

Receivables Financing Facility

On August 13, 2021, the Company amended its receivables financing facility (the "Receivables Amendment") to extend the term of the facility to October 1, 2024 and to increase the size of the facility to $550 million from $300 million. Under the receivables financing facility, certain of our accounts receivable are sold on a non-recourse basis by certain of our consolidated subsidiaries (each, an "Originator") to another of our consolidated subsidiaries, a bankruptcy-remote special purpose entity (the "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 $440 million term loan and a $110 million revolving loan commitment. Pursuant to the Receivables Amendment, we also added three additional subsidiaries as Originators. As of December 31, 2021, no additional amounts of revolving loans were available under the receivables financing facility. 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.

On November 25, 2020, the Company amended its receivables financing facility to exclude certain of its accounts receivable from the 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 Fifth Amended and Restated 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 Fifth Amended and Restated 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. As of December 31, 2021, 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. These operating leases expire at various dates through 2036 with options to cancel certain leases at various intervals. The Company also has finance leases for offices and lab spaces that expire at various dates through 2044. Based on the timing of payments on the finance leases the cash flow impact is not material for the years ended December 31, 2021, 2020 and 2019.

The components of lease expense were as follows:

(in millions)	Classification	Year Ended December 31, 2021	Year Ended December 31, 2020	Year Ended December 31, 2019
Operating lease cost [1]	Selling, general and administrative expenses	**$ 184**	$ 209	$ 193
Finance lease cost [1]	Depreciation and amortization, and Interest expense	**10**	6	—
Total lease cost		**$ 194**	$ 215	$ 193

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

Other information related to leases was as follows:

(in millions)	Year Ended December 31, 2021	Year Ended December 31, 2020	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	**$ 175**	$ 211	$ 195
Right-of-use assets obtained in exchange for lease obligations:			
Operating leases	**$ 81**	$ 109	$ 96
Finance leases	**$ 44**	$ 119	$ —
Weighted Average Remaining Lease Term:			
Operating leases	**4.53 years**	4.58 years	5.01 years
Finance leases	**21.28 years**	24.00 years	—
Weighted Average Discount Rate:			
Operating leases	**3.36%**	3.78%	4.22 %
Finance leases	**2.70%**	3.18 %	—

Future minimum lease payments under non-cancellable leases as of December 31, 2021 were as follows:

(in millions)	Operating Leases	Finance Leases
2022	$ 143	$ 10
2023	114	10
2024	86	10
2025	70	10
2026	33	10
Thereafter	48	201
Total future minimum lease payments	494	251
Less imputed interest	(41)	(65)
Total	$ 453	$ 186
Reported as of December 31, 2021:		
Other current liabilities	$ 140	$ 9
Operating lease liabilities	313	—
Other liabilities	—	177
Total	$ 453	$ 186

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 is vigorously defending 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, and the Prosecutor's Office appealed. On December 23, 2021, the appellate court affirmed the judgment of the Seoul Central District Court. The Prosecutor's Office has appealed to the Supreme Court. The Company intends to vigorously defend its position on appeal.

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 engaged in the discovery process in connection with these lawsuits.

On May 7, 2021, the Court issued an order and opinion (the "Order") in which it found significant evidence that Veeva had (1) misappropriated IQVIA data and unlawfully used it to improve Veeva data offerings, (2) engaged in a cover-up by deleting significant evidence of its theft of IQVIA's trade secrets, and (3) improperly withheld certain evidence in furtherance of a crime and/or fraud against IQVIA. The Court imposed five sanctions against Veeva, including ordering three separate adverse inference instructions be issued to the jury and that IQVIA be permitted to present evidence to the jury of Veeva's destruction efforts. Veeva is currently appealing the Order.

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, 2021 or 2020.

Equity Repurchase Program

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 the Company's common stock by $600 million, $1.5 billion, $2.0 billion, $1.5 billion, and $2.0 billion, in 2015, 2016, 2017, 2018, and 2019 respectively. On February 10, 2022 the Board increased the stock repurchase authorization under the Repurchase Program with respect to the repurchase of the Company's common stock by an additional $2.0 billion, which increased the total amount that has been authorized under the Repurchase Program to $9.725 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, 2021, the Company had remaining authorization to repurchase up to approximately $0.5 billion of its common stock under the Repurchase Program. The February 10, 2022 $2.0 billion increase in the stock repurchase authorization, increased the remaining authorization to repurchase common stock under the Repurchase Program up to approximately $2.5 billion. 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.

2021 Offerings

There were no equity offerings during the year.

2020 Offerings

There were no equity offerings during the year.

2019 Offerings

In March 2019, the Company completed an underwritten secondary public offering of 5 million 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 million 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.

Other Equity Repurchases

On February 13, 2020, the Company agreed to purchase at market price an aggregate of 1 million 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 million shares of the Company's common stock pursuant to Rule 144 under the Securities Act of 1933, as amended, for a total of 5 million shares.

In August 2019, the Company agreed to purchase an aggregate of 1 million 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 million shares of the Company's common stock pursuant to Rule 144 under the Securities Act of 1933, as amended, for a total of 5 million shares.

Summary

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

	Year Ended December 31,		
(in millions, except per share data)	**2021**	**2020**	**2019**
Number of shares of common stock repurchased	**1.7**	2.7	6.6
Aggregate purchase price	**$ 395**	$ 423	$ 945
Average price per share	**$ 238.22**	$ 155.63	$ 143.02

Non-controlling Interests

On April 1, 2021 the Company acquired the 40% non-controlling interest in Q^2 Solutions, a fully consolidated subsidiary, from Quest Diagnostics Incorporated ("Quest") for approximately $758 million, financed with cash on hand. The transaction resulted in the Company having 100% ownership in Q^2 Solutions. As of December 31, 2021, the Company had no other material non-controlling interests.

14. Business Combinations

The Company completed several individually immaterial acquisitions during the year ended December 31, 2021. The Company's assessment of fair value, including the valuation of certain acquired intangibles, 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 Company recorded goodwill from these acquisitions, primarily attributable to assembled workforce and expected synergies. The 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 materially different to the actual results of operations of the Company.

The following table provides certain financial information for these acquisitions:

	Year Ended December 31,	
(in millions)	**2021**	**2020**
Assets acquired:		
Cash and cash equivalents	$ 40	$ 10
Other assets	75	22
Goodwill	1,060	115
Other identifiable intangibles	576	101
Liabilities assumed:		
Other liabilities	(62)	(9)
Deferred income taxes, long-term	(147)	(5)
Net assets acquired (1)	$ 1,542	$ 234

(1) Total cash paid for acquisitions, net of cash acquired, in the accompanying consolidated statements of cash flows, includes contingent consideration and deferred purchase price of $44 million and $47 million for the years ended December 31, 2021 and 2020, respectively.

The portion of goodwill deductible for income tax purposes was preliminarily assessed as $503 million and $99 million for the years ended December 31, 2021 and 2020, respectively.

The following table provides a summary of the estimated fair value of certain intangible assets acquired:

(in millions)	Amortization Period	Year Ended December 31, 2021	2020
Other identifiable intangibles:			
Customer relationships	10 - 18 years	$ 393	$ 90
Non-compete agreements	3 - 5 years	2	2
Software and related assets	3 - 8 years	133	8
Trade names	3 - 15 years	31	1
Backlog	2 years	17	—
Total Other identifiable intangibles		$ 576	$ 101

15. Restructuring

The Company has continued to take restructuring actions in 2021 to align its resources and reduce overcapacity to adapt to changing market conditions and integrate acquisitions. These actions include consolidating functional activities, eliminating redundant positions, and aligning resources with customer requirements. These restructuring actions are expected to continue into 2022.

The management approved plans resulted in approximately $20 million, $52 million and $75 million of restructuring expense, net of reversals, which consisted of severance, facility closure costs and other exit-related costs in 2021, 2020, and 2019, respectively.

The following amounts were recorded for the restructuring plans:

(in millions)	Severance and Related Costs	Exit Costs	Total
Balance as of December 31, 2019	$ 64	$ 3	$ 67
Expense, net of reversals	52	—	52
Payments	(67)	(1)	(68)
Foreign currency translation and other	2	—	2
Balance as of December 31, 2020	$ 51	$ 2	$ 53
Expense, net of reversals	**20**	—	**20**
Payments	**(40)**	**(1)**	**(41)**
Foreign currency translation and other	**(1)**	**(1)**	**(2)**
Balance as of December 31, 2021	**$ 30**	**$ —**	**$ 30**

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 as of December 31, 2021 will be paid in 2022.

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, 2021	2020	2019
Domestic	**$ (73)**	$ (649)	$ (504)
Foreign	**1,201**	1,022	856
	$ 1,128	$ 373	$ 352

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

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Current expense:			
Federal and state	**$ 16**	$ —	$ 11
Foreign	**293**	244	248
	309	244	259
Deferred (benefit) expense:			
Federal and state	**(106)**	(161)	(109)
Foreign	**(40)**	(11)	(34)
	(146)	(172)	(143)
	$ 163	$ 72	$ 116

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% were as follows:

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Federal income tax expense at statutory rate	**$ 237**	$ 78	$ 74
State and local income taxes, net of federal effect	**2**	19	—
Research and development	**(14)**	(14)	(21)
United States taxes recorded on foreign earnings(*)	**(29)**	2	9
Tax contingencies	**3**	(5)	27
Foreign Derived Intangible Income ("FDII")	**(34)**	(8)	20
Foreign rate differential	**17**	25	26
Equity compensation	**(23)**	(29)	(14)
Non-taxable gain on acquisition adjustment	**—**	6	(5)
Non-controlling interest	**—**	(5)	(6)
Other	**4**	3	6
	$ 163	$ 72	$ 116

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

In 2021, the Company recorded a benefit of $29 million related to a 2020 U.S. Federal tax return position associated with Foreign Derived Intangible Income ("FDII") and GILTI tax credits. Also in 2021, the Company recorded a $9 million tax expense as a result of the U.S. Treasury Department issuing final regulations on Foreign Tax Credits.

In 2020, the U.S. Treasury Department issued final regulations regarding FDII and GILTI. The Company has determined it will elect the GILTI high tax exception as allowed by the final regulations and has amended its 2018 U.S. Federal consolidated income tax returns and plans to amend its 2019 U.S. Federal consolidated income tax returns resulting in a favorable impact of $26 million, which the Company recorded in 2020.

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 enacted by the U.S. government on December 22, 2017. 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. The final regulations related to the transition tax did not have a material impact on the Company. As a result of the proposed FDII guidance, which was subsequently finalized in 2020, the Company reversed the tax benefit originally recorded in 2018 by recording a tax expense of $25 million for this impact in 2019.

Undistributed earnings of the Company's foreign subsidiaries amounted to approximately $4,260 million as of December 31, 2021. 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:

	December 31,	
(in millions)	**2021**	**2020**
Deferred income tax assets:		
Net operating loss and capital loss carryforwards	**$ 212**	$ 231
Tax credit carryforwards	**375**	369
Accrued expenses and unearned income	**59**	54
Employee benefits	**212**	228
Lease liability	**92**	139
Foreign exchange on debt instruments	**—**	143
U.S. interest expense limitation	**62**	75
Other	**64**	64
Total deferred income tax assets	**1,076**	1,303
Valuation allowance for deferred income tax assets	**(294)**	(306)
Total deferred income tax assets (net of valuation allowance)	**782**	997
Deferred income tax liabilities:		
Amortization and depreciation	**(898)**	(1,038)
Lease right-of-use assets	**(81)**	(133)
Foreign exchange on debt instruments	**(36)**	—
Other	**(53)**	(50)
Total deferred income tax liabilities	**(1,068)**	(1,221)
Net deferred income tax liabilities	**$ (286)**	$ (224)

During 2021 the net deferred tax liabilities increased mainly due to foreign exchange revaluations of debt instruments offset by a decrease in deferred tax liabilities mainly due to amortization of intangibles related to the merger between Quintiles and IMS Health.

The Company had federal, state and local, and foreign tax loss carryforwards and tax credits, the tax effect of which was $631 million as of December 31, 2021. Of this amount, $22 million has an indefinite carryforward period, and the remaining $609 million expires at various times beginning in 2022. 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 2021, the Company decreased its valuation allowance by $12 million to $294 million as of December 31, 2021 from $306 million as of December 31, 2020. The valuation allowance decreased primarily due to current year state tax expenses on foreign exchange revaluations on debt instruments and in use of U.S. state net operating losses. The valuation allowance increased primarily due to branch basket foreign tax credits that the Company has determined are not more likely than not to be used before their expiration.

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

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Balance as of January 1,	**$ 118**	$ 120	$ 94
Additions based on tax positions related to the current year	**7**	5	5
Additions for income tax positions of prior years	**16**	15	33
Impact of changes in exchange rates	**(3)**	3	—
Settlements with tax authorities	**(2)**	(2)	(1)
Reductions for income tax positions of prior years	**(11)**	(16)	(6)
Reductions due to the lapse of the applicable statute of limitations	**(9)**	(7)	(5)
Balance as of December 31,	**$ 116**	$ 118	$ 120

As of December 31, 2021, the Company had total gross unrecognized income tax benefits of $116 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 2021, 2020 and 2019, the amount of interest and penalties recorded as an addition to income tax expense in the accompanying consolidated statements of income was $0 million, $3 million and $2 million, respectively. As of December 31, 2021, and 2020, the Company had accrued approximately $19 million and $21 million, respectively, of interest and penalties.

The Company believes that it is reasonably possible that a decrease of up to $22 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 $21 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	2017-2020
India	2006-2021
Japan	2019-2020
United Kingdom	2019-2020
Switzerland	2016-2020

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:

	Pension Benefits			
	United States Plans		Non-United States Plans	
	December 31,			
(in millions)	**2021**	**2020**	**2021**	**2020**
Obligation and funded status:				
Change in benefit obligation:				
Projected benefit obligation at beginning of year	**$ 481**	$ 401	**$ 693**	$ 591
Service costs	**14**	13	**29**	29
Interest cost	**11**	12	**6**	8
Actuarial losses	**(7)**	65	**(25)**	60
Business combinations	**—**	—	**4**	—
Benefits paid	**(11)**	(10)	**(23)**	(18)
Contributions	**—**	—	**2**	2
Amendments	**—**	—	**(2)**	(1)
Settlements	**—**	—	**(7)**	(7)
Foreign currency fluctuations and other	**—**	—	**(25)**	29
Projected benefit obligation at end of year	**488**	481	**652**	693
Change in plan assets:				
Fair value of plan assets at beginning of year	**455**	401	**475**	418
Actual return on plan assets	**76**	61	**26**	38
Contributions	**4**	3	**26**	27
Benefits paid	**(11)**	(10)	**(23)**	(18)
Settlements	**—**	—	**(7)**	(7)
Business combinations	**—**	—	**3**	—
Foreign currency fluctuations and other	**—**	—	**(6)**	17
Fair value of plan assets at end of year	**524**	455	**494**	475
Funded status	**$ 36**	$ (26)	**$ (158)**	$ (218)

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

	Pension Benefits			
	United States Plans		Non-United States Plans	
	December 31,			
(in millions)	**2021**	**2020**	**2021**	**2020**
Deposits and other assets	**$ 83**	$ 23	**$ 39**	$ 7
Accrued expenses	**$ 3**	$ 2	**$ 10**	$ 15
Other liabilities	**$ 44**	$ 47	**$ 187**	$ 210
AOCI	**$ 29**	$ (21)	**$ (24)**	$ (65)

As of December 31, 2021, the benefit obligation and amount recognized in AOCI for other postretirement benefits were immaterial.

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

	Pension Benefits			
	United States Plans		Non-United States Plans	
	December 31,			
(in millions)	2021	2020	2021	2020
Accumulated benefit obligation	**$ 482**	$ 474	**$ 608**	$ 654

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:

	Pension Benefits			
	United States Plans		Non-United States Plans	
	December 31			
(in millions)	2021	2020	2021	2020
Plans with accumulated benefit obligation in excess of plan assets:				
Accumulated benefit obligation	**$ 50**	$ 52	**$ 222**	$ 572
Fair value of plan assets	**$ 5**	$ 5	**$ 67**	$ 384
Plans with projected benefit obligation in excess of plan assets:				
Projected benefit obligation	**$ 52**	$ 53	**$ 282**	$ 610
Fair value of plan assets	**$ 5**	$ 5	**$ 85**	$ 386

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

	Pension Benefits					
	United States Plans			Non-United States Plans		
	Year Ended December 31,					
(in millions)	2021	2020	2019	2021	2020	2019
Service cost	**$ 14**	$ 13	$ 12	**$ 29**	$ 29	$ 25
Interest cost	**11**	12	14	**6**	8	9
Expected return on plan assets	**(32)**	(30)	(25)	**(20)**	(18)	(16)
Amortization of actuarial losses	**—**	—	—	**1**	1	—
Curtailment gain	**—**	—	—	**—**	—	(5)
Settlement gain	**—**	—	—	**1**	—	—
Net periodic benefit cost	**(7)**	(5)	1	**17**	20	13
Other changes in plan assets and benefit obligations recognized in other comprehensive loss:						
Actuarial (gain) loss – current years	**(50)**	34	(2)	**(39)**	35	32
Prior service cost - current year	**—**	—	—	**(2)**	—	—
Curtailment gain - current year	**—**	—	—	**—**	—	5
Total recognized in other comprehensive income	**(50)**	34	(2)	**(41)**	35	37
Total recognized in net periodic benefit cost and other comprehensive income	**$ (57)**	$ 29	$ (1)	**$ (24)**	$ 55	$ 50

All components of net periodic benefit cost other than service cost are recorded in other income, net on the accompanying consolidated statements of income. Gain (losses) affecting the benefit obligation for the period ending December 31, 2021 was primarily related to the change in discount rate.

Assumptions

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

	Pension Benefits					
	United States Plans			Non-United States Plans		
	2021	2020	2019	2021	2020	2019
Discount rate	**2.84%**	3.52%	4.42%	**1.00%**	1.45%	1.99%
Rate of compensation increases	**3.00%**	3.00%	3.00%	**2.55%**	2.78%	4.54%
Expected return on plan assets	**7.23%**	7.42%	7.67%	**3.92%**	3.91%	4.02%

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

	Pension Benefits			
	United States Plans		Non-United States Plans	
	2021	2020	2021	2020
Discount rate	**3.08%**	2.84%	**1.42%**	1.02%
Rate of compensation increases	**3.00%**	3.00%	**2.57%**	2.55%

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.

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.

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.

As of December 31, 2021, the Company's health care cost trend rate for the next seven years was assumed to be 7.0% and the assumed ultimate cost trend rate was 4.5%. The Company assumed that ultimate cost trend rate is reached in 2027.

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 as of December 31, 2021 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 target asset allocations and weighted average asset allocations, by asset category, were as follows:

		Plan Assets as of December 31,					
	Target	United States Plans		Non-United States Plans		Total	
Asset Category	Allocation	2021	2020	2021	2020	2021	2020
Equity securities	45-65%	**71.13%**	71.15%	**41.29%**	42.69%	**56.65%**	56.62%
Debt securities	10-30%	**23.72**	23.88	**24.36**	20.08	**24.03**	21.94
Real estate	0-5%	**5.15**	4.97	**—**	—	**2.65**	2.43
Other	10-30%	**—**	—	**34.35**	37.23	**16.67**	19.02
Total		**100.00%**	100.00%	**100.00%**	100.00%	**100.00%**	100.00%

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

	December 31, 2021			December 31, 2020		
Asset Category	Level 1	Level 2	Total	Level 1	Level 2	Total
	(in millions)					
Domestic equities	**$ 34**	**$ —**	**$ 34**	$ 29	$ —	$ 29
International equities	**10**	**—**	**10**	9	—	9
Corporate bonds	**75**	**—**	**75**	65	—	65
Real estate	**27**	**—**	**27**	23	—	23
Total assets in the fair value hierarchy	**146**	**—**	**146**	126	—	126
Common/collective trusts measured at net asset value ("NAV")(1)	**—**	**—**	**378**	—	—	329
Total	**$ 146**	**$ —**	**$ 524**	$ 126	$ —	$ 455

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

	December 31, 2021			December 31, 2020		
Asset Category	Level 1	Level 2	Total	Level 1	Level 2	Total
	(in millions)					
International equities	**$ 1**	**$ 56**	**$ 57**	$ 3	$ 66	$ 69
Debt issued by national, state or local government	**3**	**118**	**121**	3	93	96
Investments funds	**—**	**10**	**10**	—	10	10
Insurance contracts	**—**	**160**	**160**	—	171	171
Other	**3**	**7**	**10**	—	6	6
Total assets in the fair value hierarchy	**7**	**351**	**358**	6	346	352
Assets measured at NAV(1)	**—**	**—**	**136**	—	—	123
Total	**$ 7**	**$ 351**	**$ 494**	$ 6	$ 346	$ 475

(1) Certain investments that are measured at fair value using the net asset value (NAV) 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, 2021 and 2020.

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 as of December 31, 2021 and 2020.

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 $33 million in required contributions to its pension and postretirement benefit plans during 2022. The Company may make additional contributions into its pension plans in 2022 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)		
2022	$	44
2023		44
2024		47
2025		49
2026		54
Years 2027 through 2031		283
	$	521

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 various countries in which the Company operates. 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 2021, 2020, and 2019, the Company expensed $60 million, $48 million and $56 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 between Quintiles and IMS Health, 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 as of December 31, 2021, and the Company's expense for the year then ended, were not material.

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 Company recognized stock-based compensation expense of $170 million, $95 million and $146 million in 2021, 2020, and 2019, 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 $26 million, $14 million and $22 million in 2021, 2020, and 2019, respectively. As of December 31, 2021, there was approximately $149 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 0.97 years.

As of December 31, 2021, there were 10.0 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,		
	2021	**2020**	**2019**
Expected volatility	**27 – 31%**	23 – 31%	23 – 24%
Weighted average expected volatility	**29%**	23%	23%
Expected dividends	**0.0%**	0.0%	0.0%
Expected term (in years)	**3.6 – 6.6**	3.2 – 6.2	3.7 – 6.7
Risk-free interest rate	**0.28 – 1.40%**	0.17 –1.41%	1.55 – 2.56%

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. All outstanding stock options are fully vested.

The Company's stock option activity in 2021 is as follows:

(in millions, except number of options and exercise price)	Number of Options	Weighted Average Exercise Price	Aggregate Intrinsic Value
Outstanding as of December 31, 2020	532,627	$ 48.42	$ 70
Exercised	**(160,966)**	**40.88**	
Outstanding as of December 31, 2021	**371,661**	**$ 51.69**	**$ 86**

The total intrinsic value of options exercised was approximately $29 million, $120 million and $124 million in 2021, 2020 and 2019, respectively. The Company received cash of approximately $7 million, $25 million and $36 million in 2021, 2020, and 2019, respectively, from options exercised.

The weighted average remaining contractual life of the options outstanding and exercisable as of December 31, 2021 is 2.7 years. The total aggregate intrinsic value of the exercisable stock options as of December 31, 2021 was approximately $86 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 in three equal annual installments on each of the first three anniversaries of the date of grant.

The Company's SSR activity in 2021 is as follows:

(in millions, except number of SSRs and exercise price)	Number of SSRs	Weighted Average Exercise Price	Aggregate Intrinsic Value
Outstanding as of December 31, 2020	4,241,342	$ 112.66	$ 282
Granted	**494,929**	**184.96**	
Exercised	**(695,195)**	**103.06**	
Canceled	**(86,183)**	**152.10**	
Outstanding as of December 31, 2021	**3,954,893**	**$ 122.54**	**$ 632**

The total intrinsic value of SSRs exercised was approximately $81 million, $73 million and $47 million in 2021, 2020 and 2019, respectively.

The weighted average remaining contractual life of the SSRs outstanding and exercisable as of December 31, 2021 is 6.7 years and 5.8 years, respectively. The total aggregate intrinsic value of the exercisable SSRs and the SSRs expected to vest as of December 31, 2021 was approximately $625 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 three-year performance period (as defined in the award agreements).

The Company's performance award activity in 2021 is as follows:

	Number of Performance Awards	Weighted Average Grant-Date Fair Value
Outstanding as of December 31, 2020	786,165	$ 136.96
Granted	**248,019**	**202.66**
Additional goal achievement shares	**303,128**	**104.29**
Vested	**(631,215)**	**103.96**
Canceled	**(35,937)**	**168.49**
Outstanding as of December 31, 2021	**670,160**	**$ 175.89**

As of December 31, 2021, there are 670,160 performance awards outstanding with an intrinsic value of approximately $189 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) one-third per year beginning on the first anniversary of the grant date; (ii) 50% on the second anniversary of the date of grant and 25% on the third and fourth anniversary of the date of grant or (iii) 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 2021 is as follows:

	Number of RSUs	Weighted Average Grant-Date Fair Value
Outstanding as of December 31, 2020	573,090	$ 143.23
Granted (1)	**536,199**	**196.91**
Vested	**(214,084)**	**128.85**
Canceled	**(74,419)**	**170.29**
Outstanding as of December 31, 2021	**820,786**	**$ 179.59**

(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 1,017 deferred RSUs in 2021.

As of December 31, 2021, there are 820,786 RSUs outstanding with an intrinsic value of approximately $232 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 one- third per year beginning on the first anniversary of the date of grant.

As of December 31, 2021, 2020 and 2019, the weighted average fair value per share of the CSRs granted was $216.87, $112.10 and $99.27, respectively. The Company paid approximately $1 million, $4 million and $7 million to settle exercised CSRs in 2021, 2020, and 2019, respectively.

The weighted average remaining contractual life of the CSRs outstanding and exercisable as of December 31, 2021 is 3.5 years and 3.1 years, respectively. The total aggregate intrinsic value of the exercisable CSRs and the CSRs expected to vest as of December 31, 2021 was approximately $28 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. As of December 31, 2021, there are 12,319 Cash RSUs outstanding with an intrinsic value of approximately $3.5 million.

Restricted Stock Awards

Restricted stock awards ("RSAs") vest 25% on each of the second and third anniversaries of the grant date and 50% on the fourth anniversary of the date of grant. As of December 31, 2021, there are no RSAs outstanding.

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 transactions with related parties that are not deemed to be material, including investments in 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:

	December 31,	
(in millions)	**2021**	**2020**
Property, equipment and software, net:		
Americas:		
United States	**$ 1,573**	$ 1,379
Other	**69**	66
Americas	**1,642**	1,445
Europe and Africa	**218**	161
Asia-Pacific	**61**	70
Total property, equipment and software, net	**$ 1,921**	$ 1,676

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 insights 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.

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 related to integration activities and acquisitions. The Company also does not allocate depreciation and amortization or impairment charges to its segments. 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. The Company's reportable segment information is presented below:

(in millions)	Year Ended December 31, 2021	2020	2019
Revenues			
Technology & Analytics Solutions	**$ 5,534**	$ 4,858	$ 4,486
Research & Development Solutions	**7,556**	5,760	5,788
Contract Sales & Medical Solutions	**784**	741	814
Total revenues	**13,874**	11,359	11,088
Costs of revenue, exclusive of depreciation and amortization			
Technology & Analytics Solutions	**3,278**	2,900	2,663
Research & Development Solutions	**5,303**	3,974	3,936
Contract Sales & Medical Solutions	**652**	626	701
Total costs of revenue	**9,233**	7,500	7,300
Selling, general and administrative expenses			
Technology & Analytics Solutions	**798**	742	722
Research & Development Solutions	**777**	738	711
Contract Sales & Medical Solutions	**57**	58	61
General corporate and unallocated	**332**	251	240
Total selling, general and administrative expenses	**1,964**	1,789	1,734
Segment profit			
Technology & Analytics Solutions	**1,458**	1,216	1,101
Research & Development Solutions	**1,476**	1,048	1,141
Contract Sales & Medical Solutions	**75**	57	52
Total segment profit	**3,009**	2,321	2,294
General corporate and unallocated	**(332)**	(251)	(240)
Depreciation and amortization	**(1,264)**	(1,287)	(1,202)
Restructuring costs	**(20)**	(52)	(75)
Total income from operations	**$ 1,393**	$ 731	$ 777

21. Earnings Per Share

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

(in millions, except per share data)	Year Ended December 31, 2021	2020	2019
Numerator:			
Net income attributable to IQVIA Holdings Inc.	**$ 966**	$ 279	191
Denominator:			
Basic weighted average common shares outstanding	**191.4**	191.3	195.1
Effect of dilutive stock options and share awards	**3.6**	3.7	4.5
Diluted weighted average common shares outstanding	**195.0**	195.0	199.6
Earnings per share attributable to common stockholders:			
Basic	**$ 5.05**	$ 1.46	$ 0.98
Diluted	**$ 4.95**	$ 1.43	$ 0.96

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. Performance awards are included in diluted earnings per share based on if the performance targets have been met at the end of the reporting period.

For the years ended December 31, 2021, 2020, and 2019 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 was: 0.1, 2.4, and 2.0, million, respectively.

22. Accumulated Other Comprehensive (Loss) Income

Below is a summary of the components of AOCI:

(in millions)	Foreign Currency Translation	Derivative Instrument	Defined Benefit Plans	Income Taxes	Total
Balance as of December 31, 2018	$ (419)	$ (1)	$ 19	$ 177	$ (224)
Other comprehensive loss before reclassifications	(11)	(19)	(35)	(21)	(86)
Reclassification adjustments	—	(1)	—	—	(1)
Balance as of December 31, 2019	(430)	(21)	(16)	156	(311)
Other comprehensive income (loss) before reclassifications	35	(40)	(69)	170	96
Reclassification adjustments	—	13	—	(3)	10
Balance as of December 31, 2020	(395)	(48)	(85)	323	(205)
Other comprehensive (loss) income before reclassifications	**(165)**	**11**	**90**	**(139)**	**(203)**
Reclassification adjustments	**—**	**16**	**—**	**(4)**	**12**
Acquisition of Quest's non-controlling interest	**(10)**	—	—	—	**(10)**
Balance as of December 31, 2021	**$ (570)**	**$ (21)**	**$ 5**	**$ 180**	**$ (406)**

Below is a summary of the effects on net income of amounts reclassified from AOCI into the consolidated statements of income and the affected financial statement line item:

		Year Ended December 31,		
(in millions)	Affected Financial Statement Line Item	2021	2020	2019
Derivative instruments:				
Interest rate swaps	Interest expense	**$ (21)**	$ (13)	$ —
Foreign exchange forward contracts	Revenues	**5**	1	(5)
Foreign exchange forward contracts	Other income, net	**—**	(1)	6
Total before income taxes		**(16)**	(13)	1
Income taxes		**(4)**	(3)	—
Total net of income taxes		**$ (12)**	$ (10)	$ 1

23. Supplemental Cash Flow Information

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

	Year Ended December 31,		
(in millions)	2021	2020	2019
Supplemental Cash Flow Information:			
Interest paid	**$ 343**	$ 399	$ 421
Income taxes paid, net of refunds	**$ 222**	$ 209	$ 215

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, 2021 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

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 2022 Annual Meeting of Stockholders (the "2022 Proxy Statement") entitled "Proposal No. 1: Election of Directors", "Corporate Governance—Documents Establishing our Corporate Governance" and "Corporate Governance—Committees of the Board."

The current executive officers of the Company are as follows:

Name	Age	Position
Ari Bousbib	60	Chairman and Chief Executive Officer
Ronald E. Bruehlman	61	Executive Vice President and Chief Financial Officer
W. Richard Staub, III	59	President, Research & Development Solutions
Kevin C. Knightly	61	President, Technology & Commercial Solutions
Eric Sherbet	57	Executive Vice President, General Counsel and Secretary

Ari Bousbib, Director, Chairman and Chief Executive Officer

Mr. Bousbib is Chairman and Chief Executive Officer 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 Superieure des Travaux Publics, Paris, and an M.B.A. from Columbia University.

Ronald E. Bruehlman, Executive Vice President and Chief Financial Officer

Mr. Bruehlman was appointed as Executive Vice President and Chief Financial Officer effective August 1, 2020. Mr. Bruehlman previously served as Senior Vice President and Chief Financial Officer of IMS Health from July 2011 until the merger of IMS Health and Quintiles in 2016. Prior to joining IMS Health, Mr. Bruehlman worked for 23 years at UTC, advancing through finance positions of increasing responsibility, culminating in his appointment as Vice President, Business Development, which he held from June 2009 to April 2011, where he led the company's global strategy and corporate development activities. From June 2005 until May 2008, he was Vice President and Chief Financial Officer of Carrier Corporation. Prior to that, Mr. Bruehlman was Vice President, Financial Planning and Analysis for UTC and also served as Director, Investor Relations of UTC. Mr. Bruehlman served as a director of The Connecticut Forum from 2005 to 2015. He also served as a director of The New England Air Museum from 2009 through 2013. Mr. Bruehlman has a Bachelor of Science degree in Economics from the University of Delaware, and an M.B.A. from the University of Chicago.

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

Mr. Staub has served as President, Research & Development Solutions since November 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, Technology & Commercial Solutions

Mr. Knightly has served as President, Technology & Commercial 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 2022 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 2022 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, 2021:

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	5,817,500	(1)	$ 116.45	(3)	10,013,585	(4)
Equity compensation plans not approved by security holders	26,727	(2)	—		—	
Total	5,844,227		$ 116.45	(3)	10,013,585	

(1) Consists of: (i) 4,326,554 shares of common stock issuable upon the exercise of outstanding time-based stock options and underlying outstanding time-based SARs; (ii) 818,185 shares of common stock issuable in settlement

of outstanding restricted stock units awarded; (iii) 670,160 shares of common stock issuable in settlement of outstanding performance units awarded; and (iv) 2,601 shares of deferred common stock outstanding under the Director Deferral Plan.

(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, performance units, deferred 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 $86.61.

(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 "Corporate Governance," and "Certain Relationships and Related Party Transactions" in the 2022 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 2022 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:

(2) Financial Statement Schedules for the Years Ended December 31, 2021, 2020 and 2019

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 April 13, 2021.		8-K	001-35907	3.1	April 16, 2021
3.2	Amended and Restated Bylaws of IQVIA Holdings Inc., effective February 11, 2020.		10-K	001-35907	3.2	February 18, 2020
4.1	Specimen Common Stock Certificate of Quintiles Transnational Holdings Inc.		S-1/A	333-186708	4.1	April 26, 2013
4.2	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
4.3	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 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
4.4	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 Association, as trustee of the Notes and certain subsidiaries of the Issuer, as guarantors.		8-K	001-35907	4.1	May 10, 2019
4.5	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 Association, as trustee of the Notes and certain subsidiaries of the Issuer, as guarantors.		8-K	001-35907	4.1	August 13, 2019
4.6	Indenture, dated June 24, 2020, 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	June 24, 2020
4.7	Indenture, dated March 3, 2021, 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	March 3, 2021
10.1	Fifth Amended and Restated Credit Agreement, dated as of August 25, 2021, by and among IQVIA Inc., IQVIA RDS Inc., IQVIA AG, IQVIA Solutions Japan K.K., IQVIA Holdings Inc., the Guarantors party thereto and the Lenders party thereto (Annex A to Exhibit 10.1 filed August 25, 2021).		8-K	001-35907	10.1	August 25, 2021
10.2	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	10.3	March 24, 2014
10.3	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	10.3	March 24, 2014
10.4	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
10.5†	Form of Director Indemnification Agreement.		S-1/A	333-186708	10.1	April 19, 2013
10.6	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

10.7†	Description of Non-Employee Director Compensation, effective as of January 1, 2017.	10-K	001-35907	10.27	February 16, 2017
10.8†	Form of Non-Competition, Non-Solicitation, Confidentiality and IP Agreement.	8-K	001-35907	10.2	October 19, 2015
10.9†	Quintiles Transnational Holdings Inc. Annual Management Incentive Plan.	S-1/A	333-186708	10.57	April 19, 2013
10.10†	Quintiles Transnational Holdings Inc. 2008 Stock Incentive Plan.	S-1	333-186708	10.17	February 15, 2013
10.11†	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
10.12†	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
10.13†	Quintiles Transnational Holdings Inc. 2013 Stock Incentive Plan.	S-1/A	333-186708	10.22	April 19, 2013
10.14†	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
10.15†	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
10.16†	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
10.17†	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
10.18†	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
10.19†	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
10.20†	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
10.21†	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
10.22†	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
10.23†	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
10.24†	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
10.25†	Quintiles IMS Holdings, Inc. Defined Contribution Executive Retirement Plan.	8-K	001-35907	10.7	October 3, 2016
10.26†	IMS Health Incorporated Defined Contribution Executive Retirement Plan, as amended and restated.	IMS Health S-1	333-193159	10.10	January 2, 2014
10.27†	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
10.28†	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

10.29†	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
10.30†	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
10.31†	Quintiles IMS Holdings, Inc. 2010 Equity Incentive Plan.	8-K	001-35907	10.5	October 3, 2016
10.32†	Healthcare Technology Holdings, Inc. 2010 Equity Incentive Plan, as amended and restated.	IMS Health S-1/A	333-193159	10.16	February 13, 2014
10.33†	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
10.34†	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
10.35†	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
10.36†	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
10.37†	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
10.38†	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
10.39†	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
10.40†	Quintiles IMS Holdings, Inc. 2014 Incentive and Stock Award Plan.	8-K	001-35907	10.6	October 3, 2016
10.41†	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
10.42†	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
10.43†	2014 IMS Health Annual Incentive Plan.	IMS Health S-1/A	333-193159	10.30	March 10, 2014
10.44†	Quintiles IMS Holdings, Inc. 2017 Incentive and Stock Award Plan.	DEF 14A	001-35907	Appendix B	February 22, 2017
10.45†	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
10.46†	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
10.47†	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
10.48†	Quintiles IMS Incorporated Employee Protection Plan, effective January 1, 2017.	10-K	001-35907	10.69	February 16, 2017
10.49†	Quintiles IMS Incorporated Savings Equalization Plan, effective December 31, 2016.	10-K	001-35907	10.76	February 16, 2017
10.50†	Quintiles Transnational Corp. Elective Deferred Compensation Plan, as amended and restated.	10-Q	001-35907	10.1	October 28, 2015
10.51†	Quintiles IMS Holdings Inc. Non-Employee Director Deferral Plan, effective January 1, 2017.	10-K	001-35907	10.78	February 16, 2017

10.52†	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
10.53†	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
10.54†	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
10.55†	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
10.56†	Letter Agreement between the Company and W. Richard Staub, III, effective on November 30, 2016.		10-K	001-35907	10.104	February 16, 2017
10.57†	Letter Agreement between the Company and Eric Sherbet, effective on March 1, 2018.		10-K	001-35907	10.72	February 19, 2019
10.58†	Letter Agreement between the Company and Ronald Bruehlman, effective on August 1, 2020.		10-Q	001-35907	10.10	October 22, 2020
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 Sarbanes-Oxley Act of 2002.	X				
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/ Ronald E. Bruehlman
Name: Ronald E. Bruehlman
Title: Executive Vice President and Chief Financial Officer

Date: February 16, 2022

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

Signature	Title	Date
/s/ Ari Bousbib Ari Bousbib	Chairman, and Chief Executive Officer; Director (Principal Executive Officer)	February 16, 2022
/s/ Ronald E. Bruehlman Ronald E. Bruehlman	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	February 16, 2022
/s/ Emmanuel N. Korakis Emmanuel N. Korakis	Senior Vice President, Chief Accounting Officer, Corporate Controller and Treasurer (Principal Accounting Officer)	February 16, 2022
/s/ Carol J. Burt Carol J. Burt	Director	February 16, 2022
/s/ John P. Connaughton John P. Connaughton	Director	February 16, 2022
/s/ John G. Danhakl John G. Danhakl	Director	February 16, 2022
/s/ James A. Fasano James A. Fasano	Director	February 16, 2022
/s/ Colleen A. Goggins Colleen A. Goggins	Director	February 16, 2022
/s/ John M. Leonard, M.D. John M. Leonard, M.D.	Director	February 16, 2022
/s/ Ronald A. Rittenmeyer Ronald A. Rittenmeyer	Director	February 16, 2022
/s/ Todd B. Sisitsky Todd B. Sisitsky	Director	February 16, 2022
/s/ Sheila A. Stamps Sheila A. Stamps	Director	February 16, 2022
/s/ Leslie Wims Morris Leslie Wims Morris	Director	February 16, 2022

(2) Financial Statement Schedules

Schedule I—Condensed Financial Information of Registrant

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

(in millions)	Year Ended December 31, 2021	2020	2019
Equity in earnings of subsidiary, net of tax	$ 966	$ 279	$ 191
Net income	966	279	191
Equity in other comprehensive (loss) income of subsidiary, net of tax	(191)	106	(87)
Comprehensive income	$ 775	$ 385	$ 104

IQVIA HOLDINGS INC. (PARENT COMPANY ONLY)

CONDENSED BALANCE SHEETS

(in millions, except per share data)	December 31, 2021	December 31, 2020
ASSETS		
Current assets:		
Cash and cash equivalents	**$ 2**	$ 1
Total current assets	**2**	1
Investment in subsidiary	**9,667**	9,666
Total assets	**$ 9,669**	$ 9,667
LIABILITIES AND STOCKHOLDERS' EQUITY		
Liabilities:		
Investment in subsidiary	**$ 3,625**	$ 3,664
Payable to subsidiary	**2**	2
Total liabilities	**3,627**	3,666
Commitments and contingencies		
Stockholders' equity:		
Common stock and additional paid-in capital, 400.0 shares authorized as of December 31, 2021 and 2020, $0.01 par value, 255.8 shares issued and 190.6 shares outstanding as of December 31, 2021; 254.7 shares issued and 191.2 shares outstanding as of December 31, 2020	**10,777**	11,095
Retained earnings	**2,243**	1,277
Treasury stock, at cost, 65.2 and 63.5 shares as of December 31, 2021 and 2020, respectively	**(6,572)**	(6,166)
Accumulated other comprehensive loss	**(406)**	(205)
Total stockholders' equity	**6,042**	6,001
Total liabilities and stockholders' equity	**$ 9,669**	$ 9,667

IQVIA HOLDINGS INC. (PARENT COMPANY ONLY)

CONDENSED STATEMENTS OF CASH FLOWS

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Operating activities:			
Net Income	**$ 966**	$ 279	$ 191
Adjustments to reconcile net income to cash provided by operating activities:			
Equity in earnings of subsidiary	**(966)**	(279)	(191)
Change in operating assets and liabilities:			
Other operating assets and liabilities	**(1)**	—	—
Net cash (used in) provided by operating activities	**(1)**	—	—
Investing activities:			
Investment in subsidiary, net of dividends received	**467**	477	951
Net cash provided by investing activities	**467**	477	951
Financing activities:			
(Payments) proceeds related to employee stock option plans	**(59)**	(44)	11
Repurchase of common stock	**(406)**	(434)	(963)
Intercompany with subsidiary	**—**	(1)	3
Net cash used in financing activities	**(465)**	(479)	(949)
Increase (decrease) in cash and cash equivalents	**1**	(2)	2
Cash and cash equivalents at beginning of period	**1**	3	1
Cash and cash equivalents at end of period	**$ 2**	$ 1	$ 3

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. These condensed parent company financial statements are not the general-purpose financial statement of the reporting entity. 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. The 2019 statement of cash flow presentation has been revised to conform with current period presentation.

Below is a summary of the dividends paid to the Parent by IQVIA Incorporated in 2021, 2020 and 2019:

(in millions)	**Amount**
Paid in December 2021	**$ 57**
Paid in November 2021	**89**
Paid in October 2021	**60**
Paid in September 2021	**36**
Paid in August 2021	**35**
Paid in July 2021	**25**
Paid in June 2021	**20**
Paid in May 2021	**23**
Paid in April 2021	**4**
Paid in March 2021	**51**
Paid in February 2021	**70**
Total paid in 2021	**$ 470**
Paid in December 2020	$ 81
Paid in October 2020	20
Paid in July 2020	2
Paid in March 2020	44
Paid in February 2020	333
Total paid in 2020	$ 480
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

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, 2021	**$ 306**	**$ 1**	**$ —**	**$ (13)**	**$ 294**
December 31, 2020	$ 266	$ 40	$ —	$ —	$ 306
December 31, 2019	$ 226	$ 40	$ —	$ —	$ 266

(a) Recorded through purchase accounting transaction.
(b) Impact of reductions recorded to expense and translation adjustments.

Exhibit 21.1

IQVIA Holdings Inc.

Subsidiary Listing – as of 12/31/2021

Subsidiary	Jurisdiction or State of Organization
159 Solutions, LLC	California
159 Technology Solutions Private Ltd	India
AECIO IT Solutions India Private Ltd.	India
AHM Global Services, LLC	New Jersey
Albatross Financial Solutions Limited	England
ALIMED Egeszsegugyi Szolgaltato Kft.	Hungary
Allcare Plus Pharmacy LLC	Massachusetts
Aposphäre GmbH	Germany
Ardentia International Limited	England
Ascott Sales Integration Pty Ltd	Australia
Asesorias IQVIA Solutions Chile Limitada	Chile
Asserta Centroamerica Medicion de Mercados, S.A.	Guatemala
Avacare Clinical Research Network (Shanghai) Co., Ltd.	China
Battaerd Mansley Pty. Ltd.	Australia
Benefit Holding, Inc.	North Carolina
Biofortis, LLC	Delaware
Branch of IQVIA RDS GesmbH in Novosibirsk	Russia
Branch of IQVIA RDS GesmbH in St. Petersburg	Russia
BuzzeoPDMA LLC	Delaware
Cambridge Pharma Consultancy Inc.	Delaware
Cambridge Pharma Consultancy Limited	England
CDS - Centre de Service SAS	France
Cegedim Venezuela C.A.	Venezuela
Cenduit (India) Services Private Limited	India
Cenduit Limited	England
Cenduit Mauritius Holdings Company	Mauritius
Centrix Innovations (Pty) Ltd.	South Africa
CFS Clinical UK Limited	England
Clinical Financial Services, LLC	Pennsylvania
Clinical Insourcing Solutions Limited	Ireland
Clinical Insourcing Solutions S. de R.L. de C.V.	Mexico
Clinical Lab Minority Shareholder Limited	England
Clinical Solutions Group, LLC	North Carolina
ClinTec Austria GmbH	Austria
ClinTec CRO Services (India) Private Limited	India
ClinTec Gesellschaft fur Klinische Entwicklung GmbH	Germany
ClinTec International (Pty) Ltd.	South Africa

ClinTec International (Pty) Ltd. (Malawi branch)	Malawi
ClinTec International (Thailand) Limited	Thailand
ClinTec International AG	Switzerland
ClinTec International Belgium BV	Belgium
ClinTec International Bulgaria OOD	Bulgaria
ClinTec International doo	Serbia
ClinTec International FZ-LLC	United Arab Emirates
ClinTec International Hong Kong Limited	Hong Kong
ClinTec International Hungary Kft	Hungary
ClinTec International Italy S.r.l.	Italy
ClinTec International Limited	New Zealand
ClinTec International Limited	Kenya
ClinTec International Limited	Taiwan
ClinTec International LLC	Ukraine
ClinTec International Ltd (Netherlands Branch)	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 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.à r.l.	France
ClinTec International s.r.o.	Czech Republic
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	Turkey
ClinTech Ireland International Research Limited	Ireland
Comline GmbH	Germany
Compliant Community Projects (Pty) Ltd.	South Africa
CoreZetta Co Ltd.	Republic of Korea
CT Clinical Services EOOD	Bulgaria
CT Consulting Inc.	Philippines
CTcue B.V.	Netherlands
Data Niche Associates, Inc.	Illinois
Dataline Software Limited	England
Datandina Ecuador S.A.	Ecuador
Datec Industria e Comercio, Distribudora Grafica e Mala Direta Ltda.	Brazil
DAVASO GmbH	Germany

DAVASO Group Holding GmbH	Germany
DAVASO Holding GmbH	Germany
Dimensions Healthcare Company Ltd	Palestinian Territory
Dimensions Healthcare LLC	United Arab Emirates
Dimensions Healthcare LLC (Dubai Branch)	United Arab Emirates
DMRK Consulting Private Limited	India
DrugDev Inc.	Delaware
EA Institute, L.L.C.	Delaware
Epernicus, LLC	Delaware
EPID Research Oy	Finland
EPS Research Limited	England
EPS Software Limited	England
Evigrade - Health Care Research Consulting, Unipessoal, LDA	Portugal
Excel Life Sciences Inc.	Delaware
Excel Life Sciences Private Limited	India
Forcea NV	Belgium
Foresight IT Solutions and Consulting India Private Limited	India
Foundry Health, LLC	Wisconsin
GCE Clin Solutions Limited	England
GCE Global Solutions, LLC	Delaware
GCE Solutions (Pty) Limited	South Africa
GCE Solutions International, LLC	Delaware
GCE Solutions, S. de R.L. de C.V.	Mexico
Global Crown Investment Limited	Hong Kong
Grace Data Corp.	California
gradient.Systemintegration GmbH	Germany
Hospital Marketing Services Ltd.	England
Hotel Lot C-8B, LLC	North Carolina
Iasist Holdco Limited	England
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 Data Management (Pty) Ltd.	South Africa
IMS (UK) Pension Plan Trustee Company Limited	England
IMS AB	Sweden
IMS Health Analytics Services Private Limited	India
IMS Health de Venezuela C.A.	Venezuela
IMS Health Group Limited	England
IMS Health Information Solutions Australia Pty. Ltd	Australia
IMS Health Information Solutions India Private Ltd.	India
IMS Health Networks Limited	England
IMS Health Paraguay Srl	Paraguay

IMS Health Surveys Limited	England
IMS Health Uruguay S.A.	Uruguay
IMS Hospital Group Limited	England
IMS Information Solutions Medical Research Limited	England
IMS Information Solutions UK Ltd.	England
IMS International Medical Services (Pty) Ltd	South Africa
IMS Meridian Limited	Hong Kong
IMS Meridian Research Limited	British Virgin Islands
IMS Software Services Ltd.	Delaware
IMS Technology Solutions UK Limited	England
Incarnus Malaysia Sdn Bhd	Malaysia
Infocus Health Limited	England
Infopharm Ltd.	England
Innovex Holdings I LLC	Delaware
Innovex Merger Corp.	North Carolina
Innovex Saglik Urunleri Pazarlame ve Hizmet Danismanlik Anonim	Turkey
Inteliquet, Inc.	Delaware
Intercontinental Medical Statistics International, Ltd.	Delaware
Intercontinental Medical Statistics Kenya Ltd.	Kenya
Interface Clinical Services Ltd.	England
Interstatistik AG	Switzerland
IPP Informacion Promocional y Publicitaria S.A. de C.V.	Mexico
IQVIA Medical Development (Dalian) Co., Ltd.	China
IQVIA (Thailand) Co., Ltd.	Thailand
IQVIA AB	Sweden
IQVIA Adriatic d.o.o. za Konzalting	Croatia
IQVIA Afrique de l'Ouest Francophone	Cote d'Ivoire
IQVIA AG	Switzerland
IQVIA AG (Basal Branch)	Switzerland
IQVIA AG (Dubai Branch)	United Arab Emirates
IQVIA AG (Mexico Branch)	Mexico
IQVIA AG (Representative Office - Algeria)	Algeria
IQVIA AG (Representative Office - Dubai)	United Arab Emirates
IQVIA AG (Representative Office - Jordan)	Jordan
IQVIA AG (Representative Office - Lebanon)	Lebanon
IQVIA AG (Representative Office - Serbia)	Serbia
IQVIA AG (Rotkreuz Branch)	Switzerland
IQVIA AG (St. Prex Branch)	Switzerland
IQVIA Asia Pacific Commercial Holdings LLC	North Carolina
IQVIA Beteiligungsgesellschaft mbH	Germany
IQVIA BioSciences Holdings, LLC	Delaware
IQVIA Biotech LLC	Delaware
IQVIA Biotech Ltd.	England

IQVIA Cancer Research	Belgium
IQVIA Chinametrik Inc.	Delaware
IQVIA Clinical AB	Sweden
IQVIA Clinical, Filial af IQVIA Clinical AB	Denmark
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 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 BV	Belgium
IQVIA CRM Korea Ltd.	Republic of Korea
IQVIA CSD Korea Ltd.	Republic of Korea
IQVIA CSMS GmbH	Germany
IQVIA CSMS US Inc.	Delaware
IQVIA Finance Ireland Designated Activity Company	Ireland
IQVIA Finance Ltd.	England
IQVIA FZ-LLC	United Arab Emirates
IQVIA Government Solutions Inc.	Delaware
IQVIA Health Transformation Foundation	India
IQVIA Healthcare (QFC Branch)	Qatar
IQVIA Hellas Technology Solutions Single Member S.A.	Greece
IQVIA Holdings (UK) Ltd.	England
IQVIA Holdings France Sas	France
IQVIA Holdings Inc.	Delaware
IQVIA IES Brasil Ltda.	Brazil
IQVIA IES Denmark ApS	Denmark
IQVIA IES Europe Limited	England
IQVIA IES European Holdings	England
IQVIA IES Italia S.r.L.	Italy
IQVIA IES Overseas Holdings Limited	England
IQVIA IES Oy	Finland
IQVIA IES Portugal Unipessoal LDA	Portugal
IQVIA IES Puerto Rico Inc.	Puerto Rico
IQVIA IES South Africa (Pty) Limited	South Africa
IQVIA IES UK Limited	England
IQVIA II Technology Solutions Portugal, Unipessoal LDA	Portugal
IQVIA Inc.	Delaware
IQVIA Inc. (Thailand Branch)	Thailand

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 Integrated Services NL	Netherlands
IQVIA Investment Holdings Limited	England
IQVIA Korea Co. Ltd.	Republic of Korea
IQVIA Lebanon S.a.r.l.	Lebanon
IQVIA LTD.	England
IQVIA Market Intelligence, LLC	North Carolina
IQVIA Marktforschung GmbH	Austria
IQVIA Maroc S.à r.l.	Morocco
IQVIA Medical Communications & Consulting, Inc.	New Jersey
IQVIA Medical Education Inc.	New York
IQVIA Medical Radar AB	Sweden
IQVIA MedTech Inc.	Delaware
IQVIA MedTech NV	Belgium
IQVIA Operations France SAS	France
IQVIA Patients Solutions S.p.A.	Italy
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 Ltd.	India
IQVIA RDS (Pty.) Limited	South Africa
IQVIA RDS (Shanghai) Co., Ltd.	China
IQVIA RDS AG	Switzerland
IQVIA RDS AG (St. Prex Branch)	Switzerland
IQVIA RDS and Integrated Services Belgium NV	Belgium
IQVIA RDS Argentina S.R.L.	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 Chile	Chile
IQVIA RDS Clindata (Pty.) Ltd.	South Africa
IQVIA RDS Clindepharm (Pty.) Ltd.	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 Africa Limited	Kenya
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 GesmbH	Austria
IQVIA RDS GmbH	Germany
IQVIA RDS Guatemala S.A.	Guatemala
IQVIA RDS Hellas Single Member S.A.	Greece
IQVIA RDS Holdings	England
IQVIA RDS Hong Kong Limited	Hong Kong
IQVIA RDS Hungary Pharmaceutical Development and Consulting	Hungary
IQVIA RDS Inc.	North Carolina
IQVIA RDS Ireland (Finance) Ltd.	Ireland
IQVIA RDS Ireland Ltd.	Ireland
IQVIA RDS Israel Ltd.	Israel
IQVIA RDS Italy S.r.l.	Italy
IQVIA RDS Latin America LLC	North Carolina
IQVIA RDS Latin America LLC (Argentina Branch)	Argentina
IQVIA RDS Latvia SIA	Latvia
IQVIA RDS Malaysia Sdn. Bhd.	Malaysia
IQVIA RDS Netherlands B.V.	Netherlands
IQVIA RDS Norway	Norway
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 Pty. Ltd.	New Zealand
IQVIA RDS Slovakia, s.r.o.	Slovakia
IQVIA RDS South Africa (Pty.) Ltd.	South Africa
IQVIA RDS Spain S.L.	Spain
IQVIA RDS Spain, S.L. Representação Permanente em Portugal	Portugal
IQVIA RDS Taiwan Ltd.	Taiwan
IQVIA RDS UAB	Lithuania
IQVIA RDS UK Holdings Ltd.	England
IQVIA RDS Ukraine	Ukraine
IQVIA RDS Vietnam LLC	Vietnam
IQVIA Research and Development Solutions Saudi Arabia Limited	Saudi Arabia
IQVIA Romania S.R.L.	Romania

IQVIA Services Japan K.K.	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 Bangladesh Limited	Bangladesh
IQVIA Solutions Belgium BV	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 Egypt Ltd.	Egypt
IQVIA Solutions Enterprise Management Consulting (Shanghai) Co.,	China
IQVIA Solutions Enterprise Management Consulting (Shanghai) Co.,	China
IQVIA Solutions Finance B.V.	Netherlands
IQVIA Solutions Finance UK I Ltd.	England
IQVIA Solutions Finance UK II Ltd.	England
IQVIA Solutions Finance UK III Ltd.	England
IQVIA Solutions Finance UK V Ltd.	England
IQVIA Solutions Finland OY	Finland
IQVIA Solutions Global Holdings UK Ltd.	England
IQVIA Solutions Holdings (Pty.) Ltd.	South Africa
IQVIA Solutions Hong Kong Limited	Hong Kong
IQVIA Solutions HQ Ltd.	England
IQVIA Solutions Ireland Limited	Ireland
IQVIA Solutions Italy S.r.l.	Italy
IQVIA Solutions Kazakhstan LLC	Kazakhstan
IQVIA Solutions Korea Ltd.	Republic of Korea
IQVIA Solutions Lanka (Private) Limited	Sri Lanka
IQVIA Solutions LLC	Russia
IQVIA Solutions Malaysia Sdn. Bhd.	Malaysia
IQVIA Solutions Norway AS	Norway
IQVIA Solutions Operations Center Philippines Inc.	Philippines
IQVIA Solutions Pakistan (Private) Limited	Pakistan

IQVIA Solutions Pharmaceutical Srl	Romania
IQVIA Solutions Philippines Inc.	Philippines
IQVIA Solutions Portugal, Lda	Portugal
IQVIA Solutions Puerto Rico Inc.	Puerto Rico
IQVIA Solutions Regional Pte. Ltd.	Singapore
IQVIA Solutions Republica Dominicana, S.R.L.	Dominican Republic
IQVIA Solutions s.r.o.	Slovakia
IQVIA Solutions Saudi Arabia Limited	Saudi Arabia
IQVIA Solutions Services Ltd.	Hungary
IQVIA Solutions Sweden AB	Sweden
IQVIA Solutions Taiwan Ltd.	Taiwan
IQVIA Solutions Tunisia S.à r.l.	Tunisia
IQVIA Solutions UK Investments Ltd.	England
IQVIA Solutions UK Limited	England
IQVIA Staff Services Sp.A.	Italy
IQVIA Technology Services Ltd.	England
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.	Slovakia
IQVIA Technology Solutions s.r.o.	Czech Republic
IQVIA Technology Solutions S.R.O. (Bulgaria Branch)	Bulgaria
IQVIA Technology Solutions Ukraine LLC	Ukraine
IQVIA Technology Tunisia S.à r.l.	Tunisia
IQVIA Tibbi Istatistik Ticaret ve Musavirlik Ltd. Sirketi	Turkey
IQVIA Trading Management Inc.	Delaware
IQVIA Transportation Services Corp.	Delaware
IQVIA West Africa	Senegal
IQVIA World Publications Ltd.	England
IQVIA Zagreb d.o.o.	Croatia
Jäger Health Gmbh	Germany
Kairos GmbH	Germany
Kun Tai Medical Development Hong Kong Limited	Hong Kong
Kun Tuo Medical Research & Development (Beijing) Co. Ltd.	China
Laboratorio Commuq Pharma SLU	Spain
Linguamatics Limited	England
Linguamatics Solutions Limited	England
M&H Informatics (BD) Ltd.	Bangladesh
Mecurial Insights Holding Pty. Ltd.	Australia
Mecurial Insights Pty. Ltd.	Australia

Meddata Group, LLC	Massachusetts
Medineos S.r.l.	Italy
Med-Vantage, Inc.	Delaware
Mercados Y Analisis, S.A.	Spain
Meridian Research Vietnam Ltd.	Vietnam
MMK Communications Co., Ltd.	Republic of Korea
Novasyte, LLC	California
Novex Pharma Laboratorio S.L.	Spain
Novex Pharma Limited	England
Nuevo Health Pty Limited	Australia
Operaciones Centralizadas Latinoamericana Limitada	Chile
Optimum Contact Limited	England
Outcome Sciences, LLC	Delaware
Penderwood Limited	England
Pharma Deals Limited	England
Pharma Strategy Group Limited	England
Pharmaforce, S.A. de C.V.	Mexico
PharmARC Consulting Services Gmbh	Switzerland
Pharmarc Inc.	New Jersey
PharmaSource Inc.	Delaware
Polaris Management Partners, LLC	New Jersey
Polaris Solutions Ltd.	Hong Kong
Polaris Solutions, LLC	New York
PR Editions S.A.S.	France
Privacy Analytics Inc.	Canada
Privacy Analytics Inc.	Delaware
Professional Pharmaceutical Marketing Services (Pty.) Ltd.	South Africa
Prometheus Research, LLC	Connecticut
PT IQVIA RDS Indonesia	Indonesia
PT IQVIA Solutions Indonesia	Indonesia
Public Relations Algeria	Algeria
Q Squared Solutions (Beijing) Co., Ltd.	China
Q Squared Solutions (Beijing) Co., Ltd. Shanghai branch	China
Q Squared Solutions (India) Private Limited	India
Q Squared Solutions (Quest) Limited	England
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	England
Q Squared Solutions China Limited	England
Q Squared Solutions Expression Analysis LLC	Delaware
Q Squared Solutions Holdings B.V.	Netherlands

Q Squared Solutions Holdings Limited	England
Q Squared Solutions Holdings LLC	Delaware
Q Squared Solutions KK	Japan
Q Squared Solutions Limited	England
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
QH Research Limited	England
QIMS Pharma Services Sa De Cv	Mexico
Quality Health Limited	England
Quintiles Benin Ltd.	Benin
Quintiles Clinical and Commercial Nigeria Limited	Nigeria
Quintiles Commercial Laboratorio S.L.U.	Spain
Quintiles Commercial Rus LLC	Russia
Quintiles Finance Uruguay S.r.L.	Uruguay
Quintiles IMS Japan GK	Japan
Quintiles Lanka (Private) Limited	Sri Lanka
Quintiles Mauritius Holdings	Mauritius
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 West Africa Limited	Ghana
Radar Acquisition Blocker, Inc.	Delaware
Redsite Limited	England
Representative Office of IQVIA RDS GesmbH in Moscow	Russia
RX India, LLC	Delaware
Schwarzeck Verlag Gmbh	Germany
Secureconsent, LLC	Delaware
Smart I.T. Systems BV	Belgium
Source Informatics Limited	England
Spartan Leasing Corporation	Delaware
StatFin Estonia OÜ	Estonia
Statfinn Oy	Finland
STI Technologies Limited	Canada
Targeted Molecular Diagnostics, LLC	Illinois
Temas Srl - Società Unipersonale	Italy
TforG Support NV	Belgium
Themis Limited	England
UAB IQVIA Commercial	Lithuania
Valuecentric Privacy Solutions LLC	Delaware
Valuemedics Research, LLC	Delaware

VCG&A, Inc.	Massachusetts
VCG-BIO, Inc.	Delaware
Vivacity Health Pty. Ltd.	Australia
ZhiWeiYunChuang Solutions Enterprise Management Consulting	China

Exhibit 23.1

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) of IQVIA Holdings Inc. of our report dated February 16, 2022 relating to the financial statements and 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 16, 2022

Exhibit 31.1

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 16, 2022

/s/ Ari Bousbib

Ari Bousbib

Chairman, Chief Executive Officer and President

(Principal Executive Officer*)*

Exhibit 31.2

CERTIFICATION OF PERIODIC REPORT UNDER SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Ronald E. Bruehlman, 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 16, 2022

/s/ Ronald E. Bruehlman

Ronald E. Bruehlman

Executive Vice President and Chief Financial Officer

(Principal Financial Officer)

Exhibit 32.1

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, 2021 (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 16, 2022

/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.

Exhibit 32.2

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO SECTION 906
OF THE SARBANES-OXLEY ACT OF 2002

I, Ronald E. Bruehlman, 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, 2021 (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 16, 2022

/s/ Ronald E. Bruehlman

Ronald E. Bruehlman

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.