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, 2022

- 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 001-37470

TransUnion

(Exact name of registrant as specified in its charter)

Delaware	**61-1678417**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**
555 West Adams, Chicago, Illinois	**60661**
(Address of principal executive offices)	**(Zip Code)**

312-985-2000
(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	TRU	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 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 12 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 and post 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 an 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.

☒ Yes ☐ No

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act).

☐ Yes ☒ No

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant was approximately $15.3 billion as of June 30, 2022 (based on the closing stock price of such stock as quoted on the New York Stock Exchange).

As of January 31, 2023, there were 192.9 million shares of TransUnion common stock outstanding, par value $0.01 per share.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Proxy Statement of TransUnion for the Annual Meeting of Stockholders to be held May 4, 2023 are incorporated by reference to the extent specified in Part III of this Form 10-K.

TRANSUNION
ANNUAL REPORT ON FORM 10-K
YEAR ENDED DECEMBER 31, 2022
TABLE OF CONTENTS

PART I 1
ITEM 1. BUSINESS 1
ITEM 1A. RISK FACTORS 20
ITEM 1B. UNRESOLVED STAFF COMMENTS 38
ITEM 2. PROPERTIES 38
ITEM 3. LEGAL PROCEEDINGS 38
ITEM 4. MINE SAFETY DISCLOSURES 38
INFORMATION ABOUT OUR EXECUTIVE OFFICERS 39
PART II 42
ITEM 5. MARKET FOR THE REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES 42
ITEM 6. RESERVED 43
ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS 44
ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK 71
ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA 73
Consolidated Balance Sheets 76
Consolidated Statements of Income 77
Consolidated Statements of Comprehensive Income 78
Consolidated Statements of Cash Flows 79
Consolidated Statements of Stockholders' Equity 80
Notes to Consolidated Financial Statements 83
ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE 119
ITEM 9A. CONTROLS AND PROCEDURES 119
ITEM 9B. OTHER INFORMATION 120
ITEM 9C. DISCLOSURES REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS 120
PART III 121
ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE 121
ITEM 11. EXECUTIVE COMPENSATION 121
ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS 121
ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE 121
ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES 121
PART IV 122
ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES 122
ITEM 16. FORM 10-K SUMMARY 125

Cautionary Notice Regarding Forward-Looking Statements

This Annual Report on Form 10-K, including the exhibits hereto, contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. These statements are based on the current beliefs and expectations of TransUnion's management and are subject to significant risks and uncertainties. Actual results may differ materially from those described in the forward-looking statements. Any statements made in this report that are not statements of historical fact, including statements about our beliefs and expectations, are forward-looking statements. Forward-looking statements include information concerning possible or assumed future results of operations, including descriptions of our business plans and strategies. These statements often include words such as "anticipate," "expect," "guidance," "suggest," "plan," "believe," "intend," "estimate," "target," "project," "should," "could," "would," "may," "will," "forecast," "outlook," "potential," "continues," "seeks," "predicts," or the negatives of these words and other similar expressions.

Factors that could cause actual results to differ materially from those described in the forward-looking statements, or that could materially affect our financial results or such forward-looking statements include:

- macroeconomic effects and changes in market conditions, including the impact of inflation, risk of recession, and industry trends and adverse developments in the debt, consumer credit and financial services markets;
- the war in Ukraine and escalating geopolitical tensions as a result of Russia's invasion of Ukraine;
- the effects of the COVID-19 pandemic, including the prevalence and severity of variants;
- our ability to provide competitive services and prices;
- our ability to retain or renew existing agreements with large or long-term customers;
- our ability to maintain the security and integrity of our data;
- our ability to deliver services timely without interruption;
- our ability to maintain our access to data sources;
- government regulation and changes in the regulatory environment;
- litigation or regulatory proceedings;
- our ability to effectively manage our costs;
- economic and political stability in the United States and international markets where we operate;
- our ability to effectively develop and maintain strategic alliances and joint ventures;
- our ability to timely develop new services and the market's willingness to adopt our new services;
- our ability to manage and expand our operations and keep up with rapidly changing technologies;
- our ability to acquire businesses, successfully secure financing for our acquisitions, timely consummate our acquisitions, successfully integrate the operations of our acquisitions, control the costs of integrating our acquisitions and realize the intended benefits of such acquisitions;
- our ability to protect and enforce our intellectual property, trade secrets and other forms of unpatented intellectual property;
- our ability to defend our intellectual property from infringement claims by third parties;
- the ability of our outside service providers and key vendors to fulfill their obligations to us;
- further consolidation in our end-customer markets;
- the increased availability of free or inexpensive consumer information;
- losses against which we do not insure;
- our ability to make timely payments of principal and interest on our indebtedness;
- our ability to satisfy covenants in the agreements governing our indebtedness;
- our ability to maintain our liquidity;
- share repurchase plans; and
- our reliance on key management personnel.

There may be other factors, many of which are beyond our control, that may cause our actual results to differ materially from the forward-looking statements, including factors disclosed under the sections entitled "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" in this report. You should evaluate all forward-looking statements made in this report in the context of these risks and uncertainties.

The forward-looking statements contained in this report speak only as of the date of this report. We undertake no obligation to publicly release the result of any revisions to these forward-looking statements to reflect the impact of events or circumstances that may arise after the date of this report.

PART I

Unless the context indicates otherwise, any reference to the "Company," "we," "us," and "our" refers to TransUnion and its direct and indirect subsidiaries.

ITEM 1 BUSINESS

Overview

TransUnion is a leading global information and insights company that makes trust possible between businesses and consumers, working to help people around the world access opportunities that can lead to a higher quality of life. That trust is built on TransUnion's ability to deliver safe, innovative solutions with credibility and consistency. We call this Information for Good.

Grounded in our heritage as a credit reporting agency, we have built robust and accurate databases of information for a large portion of the adult population in the markets we serve. We use our data fusion methodology to link and match an increasing set of disparate data to further enrich our database. We use this enriched data, combined with our expertise, to continuously develop more insightful solutions for our customers, all while maintaining compliance with global laws and regulations. Because of our work, organizations can better understand consumers in order to make more informed decisions, and earn consumer trust through great, personalized experiences, and the proactive extension of the right opportunities, tools and offers. In turn, we believe consumers can be confident that their data identities will result in better offers and opportunities.

We provide solutions that enable businesses to manage and measure credit risk, market to new and existing customers, verify consumer identities, mitigate fraud, and effectively manage call center operations. Businesses embed our solutions into their process workflows to deliver critical insights and enable effective actions. Consumers use our solutions to view their credit profiles and access analytical tools that help them understand and manage their personal financial information and take precautions against identity theft. We have deep domain expertise across a number of attractive industries, which we also refer to as verticals, including Financial Services and Emerging Verticals. Emerging verticals consists of Technology, Commerce & Communications, Insurance, Media, Services and Collections, Tenant and Employment, and Public Sector. We have a global presence in over 30 countries and territories across North America, Latin America, Europe, Africa, India, and Asia Pacific.

Our addressable market includes the global data and analytics market, which continues to grow as companies around the world increasingly recognize the benefits of data and analytics-based decision making, and as consumers recognize the important role that their data identities play in their ability to procure goods and services. There are several underlying trends supporting this market growth, including the proliferation of data, advances in technology and analytics that enable data to be processed more quickly and efficiently to provide business insights, and growing demand for these business insights across industries and geographies. Leveraging our established position as a leading provider of information and insights, we have grown our business by expanding the breadth and depth of our data, strengthening our analytics capabilities to deliver innovative solutions and a more wholistic view of the consumer wallet, expanding into complementary adjacencies and vertical markets, investing in technology infrastructure to leverage capabilities to best serve our customers, and enhancing our global operating model. As a result, we believe we are well positioned to expand our share within the markets we currently serve and capitalize on the larger data and analytics opportunity.

Our solutions are based on a foundation of data assets across financial, credit, alternative credit, identity, phone activity, digital device information, marketing, bankruptcy, lien, judgment, insurance claims, automotive and other relevant information obtained from thousands of sources including financial institutions, private databases and public records repositories. We refine, standardize and enhance this data using sophisticated algorithms to create proprietary databases. Our acquisition of Neustar, Inc. ("Neustar"), and particularly its OneID platform, has further enhanced our ability to deliver real-time, persistent identity resolution of disparate data fragments and attributes in a privacy compliant manner. Our technology infrastructure allows us to efficiently integrate our data with our analytics and technology capabilities to create and deliver innovative solutions to our customers and to quickly adapt to changing customer needs. Our deep analytics resources, including our people and tools driving predictive modeling and scoring, customer segmentation, benchmarking and forecasting, enable us to provide businesses and consumers with better insights.

We leverage our differentiated capabilities in order to serve a global customer base across multiple geographies and industry verticals. We offer our solutions to business customers in Financial Services, Insurance and other industries, and our customer base includes many of the largest companies in the industries we serve. We sell our solutions to leading consumer lending banks, credit card issuers, alternative lenders, online-only lenders ("FinTechs"), Point of Sale ("POS")/Buy Now Pay Later ("BNPL") lenders, auto lenders, auto insurance carriers, cable and telecom operators, retailers, and federal, state and local government agencies. We have been successful in leveraging our brand, our expertise and our solutions and have a leading presence in several high-growth international markets. Millions of consumers across the globe also use our data to help manage their personal finances and take precautions against identity theft.

We believe we have an attractive business model that has recurring and diversified revenue streams, low capital requirements, significant operating leverage and strong and stable cash flows. The proprietary and embedded nature of our solutions and the

integral role that we play in our customers' decision-making processes have historically translated into high customer retention and revenue visibility. We continue to deliver organic growth by increasing our sales to existing customers, developing new solutions and gaining new customers. We have a diversified portfolio of businesses across our segments, reducing our exposure to cyclical trends in any particular industry vertical or geography. We operate primarily on contributory data models in which we typically obtain updated information including a growing set of public record and alternative data at little or no cost, as we develop new solutions and expand into new industries and geographies. We are evolving our hybrid public-private cloud technology infrastructure to ensure that our systems remain highly secure, reliable, scalable, and performant by design. We are focused on processes and foundational technology that allows us to leverage demand-led consumption from public cloud providers and from our high performance privately owned infrastructure.

During 2020, the economic effect of the COVID-19 pandemic had a material and adverse impact on numerous aspects of our business, including customer demand for our services and solutions in all of our segments.

Our Evolution

We are dedicated to building upon our foundation as a global information and insights company that makes trust possible, so people around the world can access the opportunities that can lead to a higher quality of life. We have been in business for over 50 years and have established a long track record of providing innovative solutions to businesses and consumers. Since our founding as a provider of regional credit reporting services, we have built a comprehensive, valuable, and unique database of U.S. consumer information to build products that span many industry verticals. We have also strengthened our data, analytics and technology delivery capabilities and acquired complementary businesses enabling us to enhance our solutions. Leveraging our foundational strength in credit risk oriented products, we have also expanded our solution sets into complementary competencies such as fraud mitigation and digital marketing, which are further strengthened by our Neustar business and several acquisitions in our Media vertical.

Globally, we continue to grow our presence, building and acquiring credit reporting agencies in new geographies, establishing strong international footholds to expand into other emerging markets, and expanding the verticals served and solutions offered in local markets. We have also expanded the reach of our consumer solutions both directly and by partnering with other market leaders and innovators.

As part of our continued evolution, we have invested in a number of strategic initiatives that we believe will allow us to cater to the growing demand for data and analytics, provide differentiated solutions and better serve our customers. These initiatives include:

- ***Growing our Data***: We continue to invest in the breadth and depth of our data. We introduced the concept of trended data to provide the trajectory of a consumer's risk profile, used public records data to enhance the scope of business issues we can address, incorporated alternative data into our databases to allow for a more comprehensive risk assessment of banked and unbanked consumers, and have made several acquisitions in our Media vertical to add yet another dimension to our ability to match data in a digital world. Our Neustar business adds digital identifier datasets, most notably phone activity data, as well as improved capabilities to link and match certain of our datasets. We believe we are the largest provider in the United States of both nationwide consumer credit data and comprehensive, diverse public records data. We continue to improve the quality of our data, provide deeper insights and create differentiated solutions for our customers.
- ***Expanding into New Verticals and Geographic Markets:*** We have established and grown our presence in diversified verticals which consists of Technology, Commerce & Communications, Insurance, Media, Services and Collections, Tenant and Employment, and Public Sector. We have also expanded the reach of our consumer offerings by partnering with traditional and emerging providers. We have also diversified geographically by establishing a presence in attractive high-growth and strategic international markets such as the U.K., India, Colombia and the Philippines.
- ***Broadening our Solution Sets:*** From our foundation in the credit risk space, we have expanded into adjacent solution areas that can leverage our datasets and competencies, most notably fraud and marketing. Our Neustar OneID platform adds scale and broadens the scope of our fraud and marketing solutions, which can be sold across verticals.
- ***Strengthening our Analytics Capabilities:*** We have strengthened our analytics capabilities by leveraging modern technology and differentiated data assets, strategic acquisitions, utilizing more advanced tools and growing our analytics team. This has allowed us to create solutions that produce greater insights and more predictive results, which help our customers make better decisions. Our strengthened analytics capabilities have also shortened our time-to-market to create and deliver these solutions to our customers.
- ***Investing in our Technology:*** Technology is at the core of the solutions we provide to our customers. We continue to make significant investments to evolve our technology infrastructure by leveraging both internal and external resources. We also leverage the latest data and analytics technologies, enabling us to be quicker and increase our operational efficiency. Our significant ongoing investments allow us to organize and handle high volumes of disparate

data, improve delivery speeds, provide better availability, strengthen product development capabilities and continuously enhance our information security measures. Neustar bolsters our identity resolution capabilities through its OneID platform. Our technology also allows us to build and leverage capabilities across multiple geographies and industry verticals.

- ***Enhancing our Global Operating Model:*** We continue to enhance our business processes and capabilities to support our growth. We have structured our Global Solutions organization around key capabilities such as credit, fraud, marketing, analytics, decisioning, and others, and staffed the teams with experienced leaders to develop and diffuse configurable platform solutions across our geographies and vertical markets. Our Global Operations organization has centralized previously disparate functions, focusing on high-volume, repeatable activities that deliver consistent and predictable outcomes at speed. Our Global Technology organization has invested to further streamline our application ecosystem and optimize to more modern and services oriented architecture. To address our customers' needs, we have hired additional industry experts, which has allowed us to create and sell new vertical-specific solutions. Our global sales force structure includes dedicated teams for our largest customers, shared sales teams for our mid-sized customers, and call center support teams for our smaller customers, which increases our sales team's effectiveness across our target markets.

We believe that our ongoing focus on evolving with the market and with our customers' needs ensures continued improvement in our overall services to businesses and consumers. Leveraging our trusted brand, global scale and strong market position in the verticals we serve will allow us to capitalize on business opportunities worldwide and contribute to our long-term growth.

Our Market Opportunity

We believe we are well-positioned to capitalize on the long-term trend of businesses and consumers using data and analytics to make more informed decisions and manage risk more effectively. As worldwide spending on data and analytics increases, we believe there are several key trends in the global macroeconomic environment affecting the geographies and industry verticals we serve that will create increasing demand for our solutions:

- ***Rapid Growth in Data Creation and Application:*** Larger and more diversified datasets are now assembled faster while the breadth of analytical applications and solutions has expanded. Companies are increasingly relying on business analytics and data technologies to help process this data in a cost-efficient manner. Non-traditional sources of data have become important in deriving alternative metrics.
- ***Proliferation of Digital Commerce:*** Increases in online purchasing activity are creating new challenges and opportunities for businesses and consumers. Businesses are looking for solutions to improve targeting precision and identity verification in these digital environments, in order to enable better consumer experiences. We believe there is ample demand for data and insights to help businesses make better decisions, leveraging digital identity information and advanced analytics. Additionally, consumers are seeking more frictionless digital experiences, while also gaining a heightened awareness of and concern about the risks of identity theft.
- ***Advances in Technology and Analytics Unlocking the Value of Data:*** Ongoing advances in data collection, storage and analytics technology have contributed to the greater use and value of data and analytics in decision making. As businesses have gained the ability to rapidly aggregate and analyze data, they increasingly expect access to real-time data and analytics from their information providers as well as solutions that fully integrate into their workflows. We believe this has made sophisticated technology critical for gaining and retaining business in the risk and information services industry.
- ***Greater Adoption of Data Solutions Across New and Existing Industry Verticals:*** With the proliferation of data, we believe companies across new and existing industry verticals recognize the value of risk information and analytical tools, particularly when tailored to their specific needs.
    - ***Financial Services Industry:*** There is strong competition in the financial services space, with traditional financial services companies and consumer lenders competing against an increasing number of new FinTechs and POS/BNPL lenders. FinTechs and POS/BNPL lenders provide access to credit in a fast and efficient manner by utilizing sophisticated risk assessment tools that leverage data, such as behavioral data, transactional data and employment and credit information. Traditional lenders are also increasing their use of these new applications and data in order to grow their businesses while addressing regulatory requirements, lowering operating costs and better serving their customers.
    - ***Insurance Industry:*** As consumers increasingly obtain quotes from multiple insurers in an effort to lower their costs, insurers are trying to improve the accuracy of their risk assessments and initial quotes. For example, insurance carriers are using driver violation data to uncover offenses that will impact pricing earlier in the quoting process so consumers have a more accurate view of the premiums they will be charged.

- ***Other Emerging Verticals**:* We offer solutions in a diversified portfolio of other emerging verticals, which includes Technology, Commerce & Communications, Insurance, Media, Services and Collections, Tenant and Employment, and Public Sector. In the Technology, Commerce & Communications vertical we offer data-driven solutions that address the entire customer lifecycle. Within the Media vertical, our highly accurate consumer data helps companies improve their marketing investments, providing identity and audience solutions to reach the right consumers across digital channels. In Services and Collections, our solutions improve third party collectors' bottom line and help provide a quality customer experience by delivering actionable consumer insights and services. Our Tenant and Employment business provides data and insights to make informed investment, hiring, and rental decisions. Our suite of solutions in the Public Sector gives government agencies the superior data assets, analytics, and security they need to manage compliance and boost services for the constituents they serve.

- ***Increasing Lending Activity in Emerging International Markets:*** As economies in emerging markets continue to develop and mature, we believe there will continue to be favorable socio-economic trends, such as an increase in the size of the middle class and a significant increase in the use of financial services by under-served and under-banked consumers. In addition, credit penetration, as measured by the proportion of credit active adults, is relatively low in emerging markets, such as India. Furthermore, the widespread adoption and use of mobile phones in emerging markets have enabled greater levels of financial inclusion and access to banking and credit. We expect the populations in emerging markets to continue to become more credit active, resulting in increased demand for our services.

- ***Increased Management and Monitoring of Personal Financial Information and Identity Protection by Consumers:*** We expect demand for consumer solutions to continue to rise with greater consumer awareness of the importance and usage of their credit information, increased risk of identity theft due to data breaches and increasingly available free credit information. The proliferation of mobile devices has also made data much more accessible, enabling consumers to manage their finances and monitor their information in real-time. We believe these trends will continue to drive growth for our consumer business. Our acquisition of Sontiq, Inc. ("Sontiq") in particular expands our value proposition in the identity protection space.

Our Competitive Strengths

Comprehensive and Unique Datasets

Our long operating history and thought leadership in the industry have allowed us to build comprehensive and unique data assets that would be difficult for a new market entrant to replicate. Our solutions are based on a foundation of financial, credit, alternative credit, fraud, marketing, identity, bankruptcy, lien, judgment, automotive and other relevant information obtained from thousands of sources including financial institutions, private databases, public records repositories, and other alternative data sources. We refine, standardize and enhance this data using sophisticated algorithms to create proprietary databases. We are constantly updating our data to keep it current, and we continue to identify opportunities to acquire additional data. We believe that our data is unique and differentiates us from our competitors. We own several proprietary datasets such as consumer credit information, driver violation history, phone activity, digital device identifiers, business data and rental payment history. Our global data assets encompass alternative data, such as the voter registry in India, a vehicle information database in South Africa, and a mobile device database. We believe we are the largest provider of scale in the United States to possess both nationwide consumer credit data and comprehensive, diverse public records data, which allows us to better predict behaviors, assess risk and address a broader set of business issues for our customers.

Innovative and Differentiated Solutions

We consistently focus on innovation to develop new and enhanced solutions that meet the evolving needs of our customers. We believe our specialized data, analytics and solution service, our collaborative approach with our customers and our ability to serve the needs of different buyers across nearly all industries, differentiates us from our competitors. Our solutions are often scalable across different customers, geographies, and verticals. Several examples of our innovative and differentiated solutions include:

- ***CreditVision***: We continue to enhance our credit data by including new data fields, enriching values in existing data fields and expanding account history. Our enhanced credit data has been combined with hundreds of algorithms to produce CreditVision and CreditVision Link, the market-leading trended data and alternative data solutions that provide greater granularity and evaluate consumer behavior patterns over time. This results in a more predictive view of the consumer, increases the total population of consumers who can effectively be scored, and helps consumers gain improved pricing. We continue to focus on driving CreditVision penetration globally, with particular opportunity for growth internationally.

- ***Point-of-Sale / Buy Now Pay Later:*** TransUnion remains at the forefront of the BNPL credit reporting industry. In 2022, the cross-functional, global solutions-led BNPL team delivered online reporting capabilities coupled with

solutions through data and insights that support the BNPL demand. Solutions development is now complete and our teams are poised to complete the remaining operational efforts once the furnished data are received. We continue to partner closely with key BNPL market leaders and regulators on next steps.

- ***Marketing***: Our Marketing Solutions offer advanced depth, breadth, and sophistication of the marketing identity graph, leveraging new identity signals, such as in-home connected devices, and new matching models/algorithms that deepen the configurability of matched outcomes, and expanding always-on points of distribution to connect to more technology and media end-points. We have continued the expansion of audience creation tools and data availability, including an expanded set of available attributes and tools available to marketers for the rapid development and deployment of highly targeted audience segments. Our Advanced Automation for Analytics suite includes ongoing development of scenario planning and automated allocation tools that enable rapid marketing investment optimization based on detailed performance analysis. In 2022, we deployed a new customer analytics platform, Optimizer, to large clients, and launched Clean Room, which combines Neustar's and TransUnion's identity resolution, machine learning, and privacy-enhancing technology capabilities into a single platform.
- ***TruValidate:*** Our TruValidate solutions secure trust across channels and deliver friction-right experiences that empower businesses and consumers to safely and seamlessly transact in a digital world. TruValidate provides an enhanced suite of identity management, authentication, and fraud analytics solutions that protect businesses from fraud, increase acquisition rates and consumer loyalty, and optimize business operations. We continue to invest in innovative identity and fraud device proofing and authentication services and to expand our comprehensive consumer identity graph to translate the connections between personal and digital data into consumer trust decisions across their omni-channel journey. Further, Neustar has expanded our capabilities in the fraud space and enhances our ability to provide superior consumer identity insights and make trust possible between businesses and consumers. For instance, our partnership with Neuro-ID for Behavioral Analytics, which will be offered as part of a Digital Insights Solutions package that includes Device Risk and Neustar's Digital Identity Risk, will help reduce friction and eliminate false positives and negatives.
- ***TLOxp:*** TLOxp leverages proprietary data linking and matching capabilities across thousands of data sources to identify and provide insights on relationships among specific people, assets, locations, and businesses. This allows us to offer enhanced due diligence, investigation, risk management, threat assessment, identity authentication, and fraud prevention and detection solutions. Our ongoing investment in data, analytics, and innovation allows us to continue to help our customers improve critical aspects of their business and to expand our value proposition to serve additional use cases and verticals such as government, law enforcement, insurance, and healthcare. In 2022, we began offering TLOxp to credit unions through Temenos, a financial services platform provider.
- ***CreditView:*** CreditView Dashboard ("CVD") is an interactive, customer-branded dashboard that empowers consumers to take control of their credit health by providing them with credit information, insights, and educational tools in a comprehensive, user-friendly format. Consumers are able to easily view their credit profiles, see how they have changed over time, receive alerts on key credit changes, simulate the impact of financial decisions on their credit score, understand recommended actions to attain a desired score range, and receive relevant offers for financial products. In 2022, several large clients were migrated to CVD2.0, which went live in November 2021.

With our acquisitions of Neustar and Sontiq, and continued integration efforts, we are enhancing our innovative suite of solutions, including the following notable solutions:

- ***Caller Name Services ("CNAM"):*** CNAM is a Neustar solution that manages the CallerID ecosystem for the majority of U.S. communication services providers. CNAM applies proprietary methodologies to aggregate, build, cleanse, and manage data to clearly and efficiently display a caller's identity.
- ***Trusted Call Solutions ("TCS")*:** TCS is a Neustar solution that helps enterprises and communications providers reduce robocalling and spoofing, promote their brand, and improve call answer rates. Solutions include caller name optimization, robocall mitigation, certified caller, and branded call display. TCS has continued to deliver outsized growth since the acquisition.
- ***IdentityForce*:** IdentityForce is a Sontiq solution that provides identity protection services to consumers, including credit report monitoring, dark web monitoring, identity restoration services, and stolen fund disbursement, all in a flexible and user-friendly interface. Additional premium services include credit score simulators, bank monitoring, and reputation monitoring, among other features.

Technology Infrastructure

While technology advances never cease, we continue to evolve our infrastructure and our capabilities to efficiently interface with our clients in the business ecosystems in which we participate. The need to further expand and evolve our enterprise approach to technology has become more significant as TransUnion has become an increasingly global company. Our

technology infrastructure allows us to continually improve our overall services to businesses and consumers and ensures that we are well positioned to differentiate our datasets and capabilities. We believe our technology infrastructure capabilities have resulted in increased throughput, improved data matching, greater efficiency, advanced platform flexibility, better information security, and lower operating costs.

- ***Powerful Data Capabilities:*** Our technology gives us the ability to process, organize and analyze high volumes of data across multiple operating systems, databases and file types as well as to deal with both structured and unstructured data that changes frequently. We process billions of transactions on a daily basis.
- ***Enhanced Linking and Matching:*** Because our data matching technology is able to interrelate data across disparate sources, industries and time periods, we believe that we are able to create differentiated datasets and provide our customers with comprehensive insights that allow them to better evaluate risk. Neustar's OneID platform enhances our ability to deliver real-time, persistent identity resolution of disparate data fragments and attributes in a privacy compliant manner.
- ***Continuing Evolution of Our Hybrid Public-Private Cloud Infrastructure:*** At the beginning of 2020, we announced an initiative to further enhance our technology infrastructure through a multi-year investment that we refer to as Project Rise. This investment is a continuing evolution of our hybrid public-private cloud infrastructure, and is a significant upgrade to our existing infrastructure. Project Rise is an initiative designed to ensure that our technology is even more effective, efficient, secure and reliable, which we believe will enable us to perform at our highest level across all of TransUnion. Our investment will be concentrated in streamlining processes, increasing automation, and rapidly adopting a hybrid public and private cloud approach globally for a state-of-the-art technology infrastructure. We are focused on building new capabilities and developing our talent internally, to create an efficient cloud-native workforce that will provide us long-term, sustained benefits.

With our Neustar business, we have expanded the scope of Project Rise, leveraging Neustar's OneID platform and its established cloud competence to power our non-credit products. We believe this will result in a more scalable, secure, efficient and effective environment, with an upskilled technology workforce, while being cloud provider agnostic. This set of capabilities and customer solutions will help us pursue the objectives of Project Rise in a more comprehensive way. We are enabling innovation around services and solutions as part of our state-of-the-art infrastructure with a common technology stack.

The benefits we are realizing under Project Rise include:

- We are optimizing our applications into a more modern API-based and microservices-oriented architecture with built in security controls. Simplifying the delivery of our intellectual property on a global basis, further increasing our speed-to-market. We will more easily push our intellectual property into the public cloud and then pull it down for use in a given market. This approach will help us continue our rapid international expansion and more effortlessly deploy solutions across our markets. For example, matching services established for the U.S. Financial Services market can be used across the globe. In 2022, we put our first cloud region into production and conducted third-party assessments to ensure platform wellness. The success of our initial migration of dozens of applications to the cloud this year gives us confidence in our ongoing migration strategy;
- We are creating meaningful scaled economies around company-driven consumption of our infrastructure using cloud-based technology. Our cloud infrastructure platform ushers in a new way of managing, securing and auto-scaling our applications in a self-service and complete Infrastructure as Code (IaC) manner. We utilize readily available innovative tools from cloud-service providers instead of developing them ourselves. This shift will enable faster product development through new compliance tools, model training, machine learning and other cutting-edge technologies. By employing more highly automated tools with auto-provisioning infrastructure, our developers will focus on value-added, revenue generating work, freeing them from traditional preparation and enablement activities; and
- We are accessing the new public cloud business models. For example, public cloud providers have been building application and data marketplaces. This move will help ensure that no matter how data and applications are delivered to customers, whether through a public cloud marketplace or our own Prama DataHub, we will be able to participate.

Deep and Specialized Industry Expertise

We have deep expertise in a number of attractive industry verticals including Financial Services, Insurance and other verticals. Our expertise has allowed us to develop sophisticated vertical-specific solutions within these targeted industries that play an integral role in our customers' decision-making processes and are often embedded into their workflows. Our team includes industry experts with significant experience in the verticals that we target and relationships with leading companies in those verticals. We also have regulatory compliance expertise across the industries that we serve. Together, this expertise provides us with a comprehensive understanding of business trends and insights for customers in these verticals, allowing us to build solutions that cater to these customers' specific requirements. We have been able to apply our industry knowledge, data assets,

technology and analytics capabilities to develop new solutions and revenue opportunities within key verticals. For example, in Financial Services, our differentiated position allowed us to anticipate the increased demand from alternative consumer lending providers, including the prevalence of POS/BNPL lending, to create solutions that catered to these emerging providers. In Insurance, we partnered with a vehicle history data provider to launch a vehicle history score that helps insurance carriers further segment risk based on the attributes of a specific automobile. In Marketing, we recognized that we already had the foundational datasets we needed to compete in audience segmentation and identity resolution, made strategic bolt-on acquisitions, and acquired Neustar to broaden our customer base and deepen our solution capabilities.

Leading Presence in Attractive International Markets

We have been operating internationally for over 30 years and have strong global brand recognition. We have strategically targeted attractive international markets in both developed and emerging economies and have a diversified global presence, including a strong presence in Canada, Latin America, the U.K., Africa, India, and Asia Pacific. Local senior management in our International markets provide us with deeper insights into these markets and stronger relationships with our customers. We have leveraged our brand, operating history, global footprint and technology infrastructure to establish new credit bureaus in several international markets, such as Canada in 1989, India in 2001 and the Philippines in 2011. Once we establish a foothold in a region, our model is to expand the services we offer within these markets and then move into adjacent emerging markets. For example, we have used our operations in Hong Kong to expand into other Asia Pacific countries and provide analytic scoring models in the Philippines, Singapore, Malaysia and Thailand. We have used our operations in South Africa to expand into neighboring African countries. We have also entered new markets through strategic acquisitions, including Brazil in 2011, Colombia in 2016, and the U.K. in 2018.

Proven and Experienced Management Team

Our senior management team has a proven track record of strong performance and significant expertise in the markets we serve, with decades of industry experience. We continue to attract and retain experienced management talent for our businesses. Our team has deep knowledge of the data and analytics sector and expertise across the various industries that we serve. Our team has overseen our expansion into new industries and geographies, while managing ongoing strategic initiatives including our significant technology investments. As a result of the sustained focus of our management team, we have been successful in consistently driving growth, both organically and through acquiring and integrating businesses.

Our Growth Strategy

Enhance Underlying Data, Technology and Analytics Capabilities to Develop Innovative Solutions

As the demand for data and analytics solutions grows across industries and geographies, we will continue to expand the scope of our underlying data, improve our tools and technology and enhance our analytics and technology solutions capabilities to provide innovative solutions that address this demand. As the needs of businesses and consumers continue to evolve, we continue to help them meet their challenges, which our ongoing investments in data, technology and analytics enable us to do more quickly and efficiently, for example with machine learning, artificial intelligence and deep learning. With our insights and information, our customers can explore connections between people, businesses, assets and locations; identify assets, uncover inconsistencies and identify misrepresentations; and uncover evidence of financial distress.

Our continuous technology investments have also reduced the time to market for new solutions, which allow us to react quickly to customer requirements. In addition, these investments also improve efficiency, reliability, security, and performance. We also continue to take advantage of strategic partnerships that differentiate us from our competitors. For example, by leveraging our fast, available, and secure technology infrastructure and working together with one of our strategic partners we were able to provide real-time credit decisions in a matter of seconds, enabling the use of a new virtual credit card through consumers' digital wallets.

Further Penetrate Existing Industry Verticals with Current and New Solutions

We are a leading provider of risk and information solutions in several industry verticals today, including Financial Services and Insurance. We believe there is significant opportunity for further growth within these industries by expanding the number of customers to whom we sell our current solutions as well as by creating innovative new solutions that we can use to grow our presence in these industries. We focus on developing new solutions that address evolving customer needs within our industry verticals. In order to more effectively address these opportunities, we have redeployed and reallocated our sales resources to focus either on new customer opportunities or on selling additional services and solutions to existing customers. With our leading market positions, existing strong relationships in the Financial Services and Insurance verticals, and with our consumer partners, we believe we have the opportunity to further penetrate our existing customer base and capture a strong proportion of their spending across the consumer lifecycle.

Positions in New, Adjacent Industry Verticals

In addition to increasing penetration in industries where we have a substantial presence, we continue to create solutions that address customer needs in attractive new industries. Our strategy is to identify new solutions that can then be deployed to other markets where they may be applicable. We believe that our capabilities allow us to quickly create and deliver solutions to new industries and geographies where information-based analytics and technology solutions capabilities are currently underutilized. We continue to target other verticals such as Public Sector, Tenant and Employment, and Media, where we see opportunities to leverage our existing data, analytics and technology solutions capabilities. Neustar is highly complementary from a vertical perspective, with strong positions in Financial Services, Retail, Telecom, and Media. Neustar's heritage strength with Telecom providers represents an expanded growth opportunity for TransUnion.

Extend Further Into Fraud and Marketing Solutions

From our heritage in the credit risk space, we have expanded into adjacent solution areas that can leverage our datasets and competencies, most notably fraud and marketing. These solutions have broad applicability across the customers that we serve, including in key verticals such as financial services, insurance and public sector. We have broadened these capabilities through acquisitions, most notably iovation, Inc. ("iovation") in 2018 and three subsequent acquisitions in 2019 and 2020, to build out our Media vertical. In addition, our 2021 acquisition of Neustar adds scale and broadens the scope of our fraud and marketing solutions, which can be sold across verticals.

Expand our Presence in Attractive International Markets

We believe international markets present a significant opportunity for growth. We have significant scale in some of the world's fastest growing markets, such as India and Latin America, which positions us to take advantage of the favorable dynamics in these regions as their populations become more credit active. We leverage solutions developed in the United States and deploy them to international markets, after localizing them to individual market requirements. For example, after launching CreditVision in the United States, we have expanded our offerings with similar solutions globally. In markets where we have established a presence, we will expand further into adjacent verticals, such as Insurance and Consumer Solutions, as well as complementary solutions, such as marketing and fraud. We intend to continue to expand into new geographic markets by forming alliances with financial services institutions, industry associations and other local partners, and by pursuing strategic acquisitions. Across all our international expansion initiatives, we will continue to leverage our technology infrastructure to drive speed to market, scale and differentiation.

Broaden Our Reach in Consumer Market through Direct and Indirect Channels

Our consumer business continues to deliver growth with strong margins, driven by our innovative solutions and flexible and collaborative partnership model that has expanded the market for consumer services, along with greater consumer awareness of the value of their credit information and increased risk of identity theft. With our acquisition of Sontiq, we have added to our foundational credit monitoring solutions with a comprehensive set of identity protection offerings. Our strategy is to grow our own member base in the direct channel as well as expand our reach through partnerships in the indirect channel. Across both channels, our focus is on delivering value-added solutions and features while continuing to improve the consumer experience with more user-friendly interfaces and better customer service and educational tools. Within our indirect channel, we will continue to leverage and enhance our flexible technology platform to expand our relationship with existing partners as well as develop relationships with new partners and enter new verticals. We believe that partnerships not only enable us to grow our own business, but also expand the overall market and provide us access to new consumer segments. We will also continue to leverage our approach in the U.S. consumer market to further expand our consumer operations globally.

Pursue Strategic Acquisitions

While we will continue to evaluate strategic acquisitions that would allow us to accelerate growth within our existing businesses and diversify into new businesses while shifting our focus to completing the full integration of our acquisitions from previous years and reducing our debt. In recent years, we have broadened our geographic footprint, increased the breadth and depth of our datasets, enhanced our services, deepened our industry expertise in our key verticals and expanded our presence in our international markets through strategic acquisitions.

On April 8, 2022, we completed our acquisition of Verisk Financial Services ("VF"), the financial services business unit of Verisk Analytics, Inc. ("Verisk"). We have retained the leading core businesses of Argus Information and Advisory Services, Inc. and Commerce Signals, Inc. (collectively, "Argus") and have disposed of the remaining non-core businesses. Argus is relied upon by leading financial institutions, payments providers, and retailers worldwide for competitive studies, predictive analytics, models, and advisory services to provide a clear perspective on where their business stands today and to best position them for success in the future. We leverage the data provider consortium and proprietary and differentiated benchmarking datasets of these entities to provide more enhanced and holistic solution capabilities to our customers to make better and faster decisions that will help them more fully understand consumer behavior, increase financial inclusion, acquire new accounts, and improve fraud prevention, risk management, and other solutions.

On December 1, 2021, we completed two of our largest investments in the history of the company with the acquisitions of Neustar and Sontiq. Neustar, a premier identity resolution company with leading solutions in Marketing, Risk and Communications, enables customers to build connected consumer experiences by combining decision analytics with real-time identity resolution services driven by its OneID platform. The acquisition of Neustar provided immediate scale to our identity resolution services through Neustar's large, well-established customer base and we believe that Neustar will help accelerate the future growth of our identity-based solutions and expand our powerful digital identity capabilities through the addition of Neustar's distinctive data and analytics, enabling consumers and businesses to transact online with greater confidence.

Sontiq provides solutions including identity monitoring, restoration, and response products and services to empower consumers and businesses to help proactively protect against identity theft and cyber threats. The acquisition of Sontiq enables access to an attractive new base of customers and consumers through a recurring subscription-based revenue model and also complements and expands our Consumer Interactive solutions portfolio by providing valuable identity protection services for consumers. Sontiq's identity security monitoring products incorporate our credit data, are highly complementary to our capabilities and are expected to significantly increase our opportunities for growth.

In our Media vertical, our 2020 acquisitions of Tru Optik Data Corp. ("TruOptik") and Signal Digital, Inc. ("Signal"), and our 2019 acquisition of TruSignal, Inc. ("TruSignal"), provide us with an industry-leading position within a clearly defined part of the Media industry. These acquisitions allow us to deliver more real-time targeted data across online streaming services to improve our customers' digital marketing campaigns. Together with TransUnion's complementary capabilities, we believe these acquisitions allow us to enhance the customer base with higher accuracy and transparency that is missing in current identity and audience development products in the digital marketing space.

We enhanced our fraud and identity management service offerings when we acquired iovation in June 2018, one of the most advanced providers of device-based information in the world. We launched IDVision with iovation, which combines our extensive personal data with iovation's digital data to offer an enhanced suite of identity management, authentication and fraud prevention solutions that protect businesses from fraud while improving the online user experience. This results in a global network of fraud and risk insights that help businesses to quickly and accurately determine authentic customers from fraudulent ones.

In June 2018, we entered the world's second largest credit market in the U.K. Our United Kingdom business provides data, analytics and technology solutions to help businesses and consumers make informed decisions across a diverse group of industries. With a strong record of growth and innovation in both core credit and emerging solutions we have achieved strong market success.

In addition to the above, over the years we have completed a number of other acquisitions. We have also made a number of minority investments in businesses, which typically include strategic partnership arrangements that allow us to develop, expand, and deepen relationships with innovative companies with promising technologies and capabilities. We have a strong track record of integrating our acquisitions and driving long-term value creation, and we will continue to maintain a disciplined approach to pursuing acquisitions.

Segment Overview

We manage our business and report our financial results in three reportable segments: U.S. Markets, International and Consumer Interactive. We also report expenses for Corporate, which provides shared services and conducts enterprise functions. See Part II, Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," Part II, Item 8 "Financial Statements and Supplementary Data - Notes to Consolidated Financial Statements," and Note 20, "Reportable Segments," for further information about our reportable segments.

U.S. Markets

Our U.S. Markets segment provides consumer reports, actionable insights and analytics to businesses. These businesses use our services to acquire customers, assess consumer ability to pay for services, identify cross-selling opportunities, measure and manage debt portfolio risk, collect debt, verify consumer identities and mitigate fraud risk.

We deliver our solutions across multiple industry vertical markets and report disaggregated revenue as follows:

Financial Services: The Financial Services vertical consists of our consumer lending, mortgage, auto and cards and payments lines of business. Our financial services customers consist of most banks, credit unions, finance companies, auto lenders, mortgage lenders, FinTechs, and other consumer lenders in the United States. We also distribute our solutions through most major resellers, secondary market players and sales agents. Beyond traditional lenders, we work with a variety of credit arrangers, such as auto dealers and peer-to-peer lenders. We provide solutions across every aspect of the lending lifecycle; customer acquisition and engagement, fraud and ID management, retention and recovery. Our products are focused on mitigating risk and include credit reporting, credit marketing, analytics and consulting, identity verification and authentication and debt recovery solutions.

Emerging Verticals: Emerging Verticals include Technology, Commerce & Communications, Insurance, Media, Services and Collections, Tenant and Employment, and Public Sector. Our solutions in these verticals are also data-driven and address the entire customer lifecycle. We offer onboarding and transaction processing products, scoring and analytic products, marketing solutions, fraud and identity management solutions and customer retention solutions.

Within U.S. Markets, we leverage our comprehensive data assets, data matching expertise and predictive analytics to develop solutions:

- ***Comprehensive Data Assets:*** Our credit database contains the name and address of substantially all of the U.S. credit-active population, a listing of their existing credit relationships and their timeliness in repaying debt obligations. The information in our database is voluntarily provided by thousands of credit-granting institutions and other data furnishers. We enhance our data assets with alternative credit sources. We also actively source information from courts, government agencies and other public records including suits, liens, judgments, bankruptcies, professional licenses, real property, vehicle ownership, other assets, driver violations, criminal records and contact information for certain databases. We also have proprietary datasets including device-based information and phone activity data, and continue to look for opportunities to gain access to new datasets. Our databases are updated, reviewed and monitored on a regular basis.
- ***Predictive Analytics:*** Our predictive analytics capabilities allow us to analyze our proprietary datasets and provide insights to our customers to allow them to drive better business decisions. Our tools allow customers to investigate past behavior, reasonably predict the likelihood of future events and strategize actions based on those predictions. We have numerous tools such as predictive modeling and scoring, customer segmentation, benchmarking, forecasting, fraud modeling and campaign optimization, all of which cater to specific customer requirements. Our predictive analytics capabilities are developed by an analytics team with deep industry experience and a broad array of specialized qualifications.

International

The International segment provides services similar to our U.S. Markets segment to businesses in select regions outside the United States. Depending on the maturity of the credit economy in each country, services may include credit reports, analytics and technology solutions services and other value-added risk management services. We also have insurance, business and automotive databases in select geographies. These services are offered to customers in a number of industries including financial services, retail credit, insurance, automotive, collections, public sector and communications, and are delivered through both direct and indirect channels. The International segment also provides consumer solutions similar to those offered by our Consumer Interactive segment to help consumers proactively manage their personal finances. We report disaggregated revenue of our International segment for the following regions:

Canada: We have operated in Canada since 1989 and are one of only two nationwide consumer reporting agencies in the Canadian market. We operate across multiple verticals in Canada with leading positions in insurance and automotive with a strong and growing presence in Financial Services. Our Canadian customer base encompasses some of the largest companies in their verticals, including many of the top banks, credit card issuers, insurance companies and auto manufacturer lenders.

Latin America: We have been active in Latin America since 1985 when we entered the Puerto Rican market, and now operate in numerous Central and South American countries, including a strong presence in two major markets - Colombia and Brazil. We also have significant credit bureau businesses in the Dominican Republic and Chile, and a 25.69% ownership interest in Trans Union de México, S.A., the primary credit reporting agency in Mexico. In Guatemala, we maintain a centralized database that services Guatemala, Nicaragua and Costa Rica.

U.K.: In June 2018, we entered the world's second largest credit market, the U.K., when we acquired Callcredit, the second largest consumer credit bureau in the U.K. Our U.K. business provides data, analytics and technology solutions to help businesses and consumers make informed decisions across a diverse group of industries, and serves a broad set of customers including leading financial institutions and customers in other attractive, high-growth segments.

Africa: We launched our operations in Africa by entering South Africa in 1993, and have since expanded into many surrounding countries. We are highly diversified and serve a variety of industries through traditional consumer credit reporting services, insurance solutions, auto information solutions, and commercial credit information services. We provide risk and information solutions in Africa to many of the leading banks, retailers, auto dealer groups, and insurance companies.

India: In 2001, we partnered with prominent Indian financial institutions to create CIBIL, the first consumer and business credit reporting agency in India. We have since launched the country's first generic credit score, which is the most widely used credit score across the financial services industry in India. In the absence of a comprehensive national ID, we created an innovative matching algorithm that allowed us to create the most extensive consumer credit database in India. We also own or have access to several non-credit data sources that we use to enhance our solutions, including the national voters' registry, the confirmed and suspected fraud registry, property registry and tax ID database. We offer a suite of risk and information solutions across the

credit lifecycle for banks, telecommunication companies and insurance companies, as well as consumer solutions such as online credit reports and scores. India has become our second largest and our fastest growing region.

Asia Pacific: Our operations in Asia Pacific include markets such as Hong Kong, the Philippines, Thailand, Singapore, and China. Asia Pacific is a growing market with increasing demand for credit driven by a rising middle class that offers significant growth potential in analytics and technology solutions. We do business with many of the top financial institutions in the countries we serve. We have had a majority ownership interest in the principal consumer credit reporting company in Hong Kong since 1998. In partnership with leading credit card issuers in the Philippines, we launched the first consumer credit reporting agency in that market in 2011. We have also built credit risk scores for the National Credit Bureau of Thailand, in which we have a 12.25% ownership interest, the Credit Bureau of Singapore and the Credit Bureau of Malaysia.

Consumer Interactive

The Consumer Interactive segment offers solutions that help consumers manage their personal finances and take precautions against identity theft. Services in this segment include credit reports and scores, credit monitoring, identity protection and resolution, and financial management for consumers. The segment also provides solutions that help businesses respond to data breach events. Our products are provided through user-friendly online and mobile interfaces and are supported by educational content and customer support. With our acquisition of Sontiq in 2021, we have added to our foundational credit monitoring solutions with a comprehensive set of identity protection offerings. Our Consumer Interactive segment serves consumers through both direct and indirect channels.

Direct: We provide services directly to consumers, primarily on a subscription basis through websites and mobile applications. Product features include credit reports, credit scores and analysis, alerts to changes in credit information, debt analysis, debt and retirement calculators, identity protection services, and the ability to restrict third-party access to a consumer's TransUnion and Equifax credit reports, commonly known as a "credit freeze," through our paid subscription offering, and free credit freezes and credit reports. We complement these features with educational content that explains how credit and financial data is used in various industries to evaluate consumers and how a consumer's financial choices impact this evaluation. Our integrated, data-driven marketing strategy spans multiple channels including paid search, online display and email, which allows us to efficiently acquire and retain high quality consumers.

Indirect: We also provide our services to partners who may offer them on a stand-alone basis or with their own or other branded services as a bundle to consumers, governmental agencies and businesses in support of fraud or credit protection, credit monitoring, identity protections, and data breach services. We offer a broad suite of solutions that include many of the features, educational content and customer support available in our direct channel. We have taken a proactive and flexible partnership approach, which has resulted in long-term strategic relationships with some of the largest providers of credit information or identity protection services in the U.S. consumer market as well as with several large financial institutions. Through these partnerships, we have significantly expanded the overall market as well as our ability to provide consumers with the information and tools they want.

Corporate

Corporate provides support services to each segment, holds investments and conducts enterprise functions. Certain costs incurred in Corporate that are not directly attributable to one or more of the segments remain in Corporate. These costs are typically enterprise-level costs and are primarily administrative in nature.

Markets and Customers

We have a highly diversified customer base that includes companies across multiple industries, including Financial Services and Insurance. A substantial portion of our revenue is derived from companies in the financial services industry and from sales in the United States.

We leverage our comprehensive data assets, industry expertise and our technology infrastructure, allowing us to build solutions once and deploy them multiple times across the different verticals and regions. Our evolution to a hybrid public-private cloud infrastructure augments this capability. We provide services to our customers through real-time, online delivery for services such as credit reports and predictive scores, in batch form for services that help our customers proactively acquire new customers, cross-sell to existing customers and help them monitor and manage risk, and through our software-as-a-service offerings, which include a number of solutions that help businesses interpret data, maximize reimbursements, visualize insights, predict model results and apply their customer-specific criteria to facilitate real-time automated decisions at the time of customer interaction, and through our websites to consumers, for various subscription-based and transaction-based products in the United States and in other regions we serve.

We market our services globally, primarily through our own sales force. We have dedicated sales teams for our largest customers focused by industry group and geography. These dedicated sales teams provide strategic account management and direct support to customers. We use shared sales teams to sell our services to mid-size customers. Smaller customers' sales

needs are serviced primarily through call centers. We also market our services through indirect channels such as resellers, who sell directly to businesses and consumers. Our interactive direct-to-consumer services are sold primarily through our website.

Seasonality

Seasonality in the U.S. Markets segment is correlated to volumes of online credit data purchased by our financial services and mortgage customers, and our sales have generally been higher during the second and third quarters. Seasonality in our International segment is driven by local economic conditions and relevant macroeconomic market trends. In our Consumer Interactive segment, demand for our products is usually higher in the first half of the year, impacted by seasonality and our advertising spend.

Competition

The market for our services is highly competitive. We compete primarily on the basis of differentiated solutions, datasets, analytics capabilities, ease of integration with our customers' technology, stability of services, customer relationships, innovation and price. We believe that we compete favorably in each of these categories. Our competitors vary based on the business segment, industry vertical and geographical market that our solutions address.

In our U.S. Markets segment, our competition generally includes Equifax, Experian and LexisNexis, in addition to certain competitors with whom we only compete in specific industry verticals. For example, we compete with FICO in the Financial Services vertical and with Verisk Analytics, Inc. in the Insurance vertical. In marketing solutions, we compete with Experian and LiveRamp.

In our International segment, we generally compete with Equifax and Experian directly or indirectly through their subsidiaries or investments. We also compete with other competitors that may focus on a particular vertical, country or region.

In our Consumer Interactive segment, we generally compete with Equifax, Experian, FICO and LifeLock as well as personal finance websites, some of whom offer free credit information.

In addition to these competitors, we also compete with a number of other companies that may offer niche solutions catering to more specific customer requirements.

We believe the services we provide to our customers reflect our understanding of our customers' businesses, the depth and breadth of our data and the quality of our analytics and technology solutions capabilities. By integrating our services into our customers' workflows, we ensure efficiency, continuous improvement and long-lasting relationships.

Information Technology

Technology

The continuous operation of our information technology systems is fundamental to our business. Our information technology systems collect, refine, access, process, deliver and store the data that is used to provide our solutions. We believe that our technology is at the core of our innovative solutions, and we continually invest in our technology and thought leaders to be a market leader. There are four critical elements to our global technology enablement platform:

*Hardware + Cloud***:** We continue to make significant investments in our infrastructure to leverage the latest data and analytics technologies through Project Rise and OneID. Our technology infrastructure gives us the ability to organize and handle high volumes of disparate data, maintain and improve our delivery speeds, increase availability and enhance our product development capabilities, while at the same time lowering our overall cost structure.

Our environment is built upon strategic partnerships. Our technology relies on several third-party, best-of-breed solutions as well as proprietary software and tools which we integrate into our platforms. Our control of our technology and infrastructure allows us to prioritize any changes and manage the roll-out of any upgrades or changes. We contract with various third-party providers to help us maintain and support our systems.

Software: Our marketing-facing solutions are designed for global deployment, such as our Brazil bureau, our first cloud-native credit bureau where we deploy best in class components. Our software is built on a common set of components, tools and practices.

We believe that our technology platform enables us to be quicker, more efficient and more cost-effective across each step of our process chain, including receiving, consolidating and updating data, implementing analytics and technology solutions capabilities, creating innovative solutions, delivering those solutions to our customers and incorporating customer feedback. Our platform has significant scale and capacity and enables us to deliver actionable information immediately to our customers as well as expand customer segments and develop solutions to meet new needs.

Operating Model: We have established a core set of global operating principles built on common practices, community, tools and training. We have established technology Centers-of-Excellence that utilize similar tools and technology in order to provide

scale and efficiency in modifying existing applications and developing new applications for our businesses. We deploy new development methodologies globally to enable rapid delivery of solutions and increase our speed-to-market. Our technology team includes both our own employees as well as additional resources from third-party providers.

Digital Associate Experience: We are also investing in our digital employee experience. We believe that to attract and retain talent we need to ensure an efficient and productive environment. We conducted a thorough needs analysis of our employees to ensure that our platforms are enabling the most effective work environment, facilitating productivity and the hybrid workspace, and providing a world-class technology foundation that enables our employees to innovate. A multi-year roadmap of modernization will be overseen by an advisory board made up of employees of all ranks, locations and seniority.

Data Centers and Business Continuity

In order to create redundancy and increase resiliency, we utilize multiple data centers in all of our major markets. We generally employ similar technologies and infrastructures in each data center to enable the optimal sharing of technical resources across geographies.

We maintain a framework for business continuity that includes written policies requiring each business and operating unit to identify critical functions. Our businesses and operating units have processes in place that are designed to maintain such functions in case there is a disruptive event. We also have a specific disaster recovery plan that will take effect if critical infrastructure or systems fail or become disabled.

As part of our program, each business unit's continuity plan is periodically updated and stored in a centralized database. These plans are monitored and reviewed by our compliance team. From time to time, our compliance team tests one or more of these plans using desktop exercises or in connection with actual events. We also periodically confirm the state of preparedness of our most critical disaster recovery procedures. We maintain systems redundancy plans for our primary U.S. data centers that allow for the transfer of capacity between geographically disbursed environments in the event there is a failure of computer hardware or a loss of our primary telecommunications lines or power sources. On an enterprise basis, our systems are designed to recover most of our operational capacity in a scenario where our primary data centers become inoperable.

Security

The security and protection of personal data is TransUnion's highest priority. TransUnion's written information security program focuses on managing risk and fulfilling global information security regulations and standards, including ISO/IEC 27001:2013, NIST CSF, PCI-DSS, HIPAA, and other international regulatory expectations in locations where we operate. Our information security program follows a risk-based approach that continuously evaluates threats, industry events and asset values to introduce enhancements when necessary. We deploy a wide range of physical and technical safeguards that provide security around the collection, storage, use, access and delivery of information we have in our possession or with our partners. These safeguards include firewalls, intrusion protection and monitoring, anti-virus and malware protection, vulnerability threat analysis, control validation, advanced persistent threat monitoring, forensic tools, encryption technologies, data transmission standards, contractual provisions, customer and partner credentialing, identity and access management, data loss prevention, access and anomaly reports and training programs for associates. We, along with other global financial services organizations, including U.S. nationwide consumer credit reporting companies, share cyber threat and attack information that may be targeted at our industry through our participation in forums such as the Financial Information Sharing and Analysis Council. These forums allow us to better understand and monitor our systems and our connectivity to our customers and partners, as well as how specific solutions that were implemented to protect against such attacks are performing. We undergo SSAE 18 and SOC2 reviews annually, and many of our major customers routinely audit our security controls. We conduct an annual Payment Card Industry Data Security Standard (PCI-DSS) compliance program and remain PCI certified. We regularly engage independent third-party organizations to evaluate TransUnion's security program to conduct independent security assessments.

Intellectual Property and Licensing Agreements

Our intellectual property is a strategic advantage and protecting it is critical to our business. Because of the importance of our intellectual property, we treat our brand, software, technology, know-how, concepts and databases as proprietary. We attempt to protect our intellectual property rights under the trademark, copyright, patent, trade secret and other intellectual property laws of the United States and other countries, as well as through the use of licenses and contractual agreements, such as nondisclosure agreements. While we hold various patents, we do not rely primarily on patents to protect our core intellectual property. Through contractual arrangements, disclosure controls and continual associate training programs, our principal focus is to treat our key proprietary information and databases as trade secrets. Also, we have registered certain trademarks, trade names, service marks, logos, internet URLs and other marks of distinction in the United States and foreign countries, the most important of which is the trademark TransUnion name and logo. This trademark is used in connection with most of the services we sell and we believe it is a known mark in the industry.

We own proprietary software that we use to maintain our databases and to develop and deliver our services. We develop and maintain business-critical software that transforms data furnished by various sources into databases upon which our services are built. We also develop and maintain software to manage our consumer interactions, including providing disclosures and resolving disputes. In all business segments, we develop and maintain software applications that we use to deliver services to our customers, through a software-as-a-service model. In particular, we develop and maintain analytics and technology solutions infrastructure that we host and make available for our customers to develop and deploy analytics to improve business performance.

We license certain data and other intellectual property to other companies on arms-length terms that are designed to protect our rights to our intellectual property. We generally use standard licensing agreements and do not provide our intellectual property to third parties without a nondisclosure and license agreement in place.

We also license certain intellectual property that is important for our business from third parties. For example, we license credit-scoring algorithms and the right to sell credit scores derived from those algorithms from third parties for a fee.

Legal and Regulatory Matters

Compliance with legal and regulatory requirements is a top priority. We are subject to numerous laws governing the collection, protection, dissemination and use of non-public personal information, credit information and other types of information. These laws are enforced by U.S. federal, state and local regulatory agencies, foreign regulatory authorities and, in some instances, through private civil litigation. Our failure to comply with applicable legal and regulatory requirements could have a negative impact on our financial condition, results of operations, reputation and overall operations.

We proactively manage our compliance with laws and regulations through a global legal, risk and compliance department that ensures enterprise standards are followed. Through the legal, risk and compliance functions, we provide training to our associates, monitor all material laws and regulations, establish compliance policies, routinely review internal processes to determine whether business practice changes are warranted, assist in the development of new products and services, and regularly meet with principal regulators and legislators to ensure transparent engagement regarding our operations.

U.S. Data and Privacy Protection

Our U.S. operations are subject to numerous laws and regulations governing privacy, data security, consumer protection and the use of consumer credit information. Certain of these laws provide for civil and criminal penalties for the unauthorized release of, or access to, this protected information. The laws and regulations that affect our U.S. business include, but are not limited to, the following:

- *Fair Credit Reporting Act (the* "*FCRA*"*)*: The FCRA applies to consumer reporting agencies, including us, as well as data furnishers and users of consumer reports. The FCRA promotes the accuracy, fairness and confidentiality of information in the files of consumer reporting agencies that engage in the practice of assembling and evaluating consumer credit and other information relating to consumers for certain specified purposes. The FCRA limits what information may be reported by consumer reporting agencies, limits the distribution and use of consumer reports, establishes consumer rights to access and dispute their own credit files, includes provisions designed to prevent identity theft and assist fraud victims, requires consumer reporting agencies to make a free annual credit report available to consumers and imposes many other requirements on consumer reporting agencies, data furnishers and users of consumer report information. Violation of the FCRA can result in civil and criminal penalties. Regulatory enforcement of the FCRA is under the purview of the Federal Trade Commission (the "FTC"), the Consumer Financial Protection Bureau (the "CFPB") and state attorneys general, acting alone or in concert with one another. Many states have their own fair credit reporting laws, which may include more exacting requirements, if not preempted by the FCRA.
- *The Dodd-Frank Wall Street Reform and Consumer Protection Act ("Dodd-Frank Act")*: The Dodd-Frank Act prohibits unfair, deceptive or abusive acts or practices ("UDAAP") with respect to consumer financial products or services and provides the CFPB with authority to enforce those provisions. The CFPB has asserted broad regulatory authority and stated that its UDAAP authority may allow it to find statutory violations even where a specific regulation does not prohibit the relevant conduct, or prior published regulatory guidance or judicial interpretation has found the activity to be in accordance with law.
- *The Economic Growth, Regulatory Relief, and Consumer Protection Act (the "EGRRCPA")*: The EGRRCPA amended certain parts of the Dodd-Frank Act, FCRA and other U.S. federal laws applicable to us. Among other things, the EGRRCPA requires that consumer reporting agencies provide consumers the option to include with their credit file an initial fraud alert for at least one year, establishes a consumer's right to place a free national security freeze that prevents consumer reporting agencies from disclosing the content of the consumer's report to a lender, and mandates that consumer reporting agencies notify consumers of their right to a credit freeze and provide instructions on how to

remove it. The EGRRCPA also requires consumer reporting agencies to provide additional credit protections and services to veterans and active duty U.S. military consumers.

- *State unfair and deceptive practices acts and practices laws:* Many states have enacted statutes that prohibit unfair and deceptive acts and practices, relating to, among other things, marketing, disclosures and billing practices within the state or directed to consumers within the state. The Company and others in the industry may be subject to these laws with respect to the marketing of consumer credit information products.
- *Gramm-Leach Bliley Act (the "GLBA")*: The GLBA regulates, among other things, the receipt, use and disclosure of non-public personal information of consumers held by financial institutions, including us. Several of our datasets are subject to GLBA provisions, including limitations on the use or disclosure of the underlying data and rules relating to the technological, physical and administrative safeguarding of non-public personal information. Violation of the GLBA can result in civil and criminal liability.
- *Drivers' Privacy Protection Act (the "DPPA")*: The DPPA requires all states to safeguard certain personal information included in licensed drivers' motor vehicle records from improper use or disclosure. The DPPA limits the use of this information sourced from State departments of motor vehicles to certain specified purposes, and does not apply if a driver has consented to the release of their data. The DPPA imposes criminal fines for non-compliance and grants individuals a private right of action, including actual and punitive damages and attorneys' fees. The DPPA provides a federal baseline of protections for individuals, and is only partially preemptive, meaning that except in a few narrow circumstances, state legislatures may pass laws to supplement the protections made by the DPPA. Many states' laws are more restrictive than the federal law.
- *Data security breach laws*: All states and some territories have adopted data security breach laws that may require notice be given to affected consumers in the event of a breach of personal information, and in some cases the provision of additional benefits such as free credit monitoring to affected individuals. Some of these laws require additional data protection measures over and above the GLBA data safeguarding requirements. If data within our system is compromised, we may be subject to provisions of various state security breach laws, including regulatory investigations or enforcement actions from state attorneys general, who enforce state data breach or unfair and deceptive practices laws.
- *Federal Trade Commission Act (the "FTC Act")*: The FTC Act prohibits unfair methods of competition and unfair or deceptive acts or practices. We must comply with the FTC Act when we market certain credit related products, such as consumer credit monitoring and identity protection services. Our data collection, use and disclosure practices and the security measures we employ to safeguard the personal data of consumers could also be subject to the FTC Act, and our data practices or our failure to safeguard data adequately may subject us to regulatory scrutiny or enforcement action.
- *The Credit Repair Organizations Act ("CROA")*: CROA regulates companies that claim to be able to assist consumers in improving their credit standing. Some courts have applied CROA to credit monitoring services offered by consumer reporting agencies and others. CROA allows for a private right of action and permits consumers to recover all money paid for alleged "credit repair" services in the event of violation.
- *The Health Insurance Portability and Accountability Act of 1996, as amended by the American Recovery and Reinvestment Act of 2009 ("HIPAA") and the Health Information Technology for Economic and Clinical Health Act ("HITECH")*: HIPAA and HITECH require companies to implement reasonable safeguards to prevent intentional or unintentional misuse or wrongful disclosure of protected health information. We obtain protected health information under a "business associate" agreement that is subject to the privacy, security and transactional requirements imposed by HIPAA and HITECH. As a business associate, we are obligated to limit our use and disclosure of health-related data to certain statutorily permitted purposes, HIPAA regulations, as outlined in our business associate agreements, and to preserve the confidentiality, integrity and availability of this data. HIPAA and HITECH also require, in certain circumstances, the reporting of breaches of protected health information to affected individuals and to the United States Department of Health and Human Services. A violation of any of the terms of a business associate agreement or noncompliance with HIPAA or HITECH data privacy or security requirements could result in administrative enforcement action and/or imposition of statutory penalties by the United States Department of Health and Human Services or a state attorney general. HIPAA and HITECH requirements supplement but do not preempt state laws regulating the use and disclosure of health-related information; state law remedies, which can include a private right of action, remain available to individuals affected by an impermissible use or disclosure of health-related data.
- *California Consumer Privacy Act ("CCPA"), California Privacy Rights Act ("CPRA"), Colorado Privacy Act ("CPA"), Connecticut Data Privacy Act ("CTDPA"), Utah Consumer Privacy Act ("UCPA"), and Virginia Consumer Data Protection Act ("VCDPA"):* Five states have enacted comprehensive privacy legislation intended to provide consumers with greater transparency and control over their personal information by providing consumers in these states with certain rights regarding their personal information and by requiring businesses to make certain disclosures and take certain other acts in furtherance of those rights. These laws exempt practices and activities

regulated by the FCRA, GLBA, HIPAA and DPPA, including our credit reporting business, but apply to other portions of our business that are not regulated by these laws. The original California privacy law was effective in 2020, with amendments in the CPRA, as well as the Virginia law, effective January 1, 2023. The Colorado and Connecticut laws will be effective July 1, 2023, and the Utah law will be effective December 31, 2023.

- *Requirements for Government Contractors*: Special requirements may apply to TransUnion when providing services to U.S. federal, state and local government agencies. For example and without limitation, TransUnion may need to abide by the Privacy Act of 1974, the Internal Revenue Service's Publication 4812, and various Federal Acquisition Regulation and associated supplemental contract clauses. Each of these laws, regulations and contract clauses dictates particular measures for the protection of personal information or information that is otherwise categorized as sensitive by the government. Government agencies frequently modify or supplement these requirements, and consequences for violations of applicable requirements may include penalties, civil liability and for severe infractions, criminal liability.

We are also subject to U.S. federal and state laws that are generally applicable to any U.S. business with national or international operations, such as antitrust laws, the Foreign Corrupt Practices Act, the Americans with Disabilities Act, climate-related regulations and various employment laws. We continuously monitor U.S. federal and state legislative and regulatory activities that involve credit reporting, data privacy and security, and other relevant subjects to identify issues in order to remain in compliance with all applicable laws and regulations.

International Data and Privacy Protection

We are subject to data protection, privacy and consumer credit laws and regulations in other jurisdictions where we conduct business. These laws and regulations include, but are not limited to, the following:

- *Canada:* The Personal Information Protection and Electronic Documents Act of 2000 ("PIPEDA") and substantially similar provincial laws govern how private sector organizations collect, use and disclose personal information in the course of commercial activities. The PIPEDA gives individuals the right to access and request correction of their personal information collected by such organizations. The PIPEDA requires compliance with the Canadian Standard Association Model Code for the Protection of Personal Information. Most Canadian provinces also have laws dealing with consumer reporting. These laws typically impose an obligation on credit reporting agencies to have reasonable processes in place to maintain the accuracy of the information, place limits on the disclosure of the information and give consumers the right to have access to, and challenge the accuracy of, the information. Quebec's new privacy bill makes a number of notable changes to the province's privacy laws, most notably increasing requirements on organizations seeking to transfer personal information outside of Quebec, starting in September 2023.
- *Colombia*: The Colombian Financial Data Protection Regime (Law 1266 of 2008) regulates the collection, use and transfer of personal data pertaining to financial services, including credit reporting. The Colombian General Data Protection Regime (Law 1581 of 2012 and Decree 1377 of 2013) covers regulation of all other personal data. Both of these regimes have applicability to credit reporting services in Colombia and together address obligations of information furnishers, database owners, consumer right of access, consumer consent and permitted information disclosures.
- *European Union*: Our data management activities and the commercial solutions we make available to the European market are subject to the General Data Protection Regulation ("GDPR"). This law establishes significant data protection and privacy standards that empower European Union consumers to exercise significant control over their personal data. In addition to a litany of substantive provisions empowering consumers to limit how data may be used, GDPR also imposes operational, data processing, and other technical requirements with which we must comply. Failure to comply with any provision of GDPR could result in significant regulatory or other enforcement penalties.
- *U.K.*: Our U.K. operations are subject to GDPR and the Privacy and Electronic Communications Regulation (the "PECR"), which together govern the processing of personal data pertaining to U.K. citizens. Enforcement of data regulation and consumer privacy matters in the U.K. resides with the Information Commissioner's Office, an independent body set up to uphold the rights of individuals in relation to the use of their personal data. The provision of credit referencing services in the U.K. is also a regulated activity that is authorized by the Financial Conduct Authority (the "FCA"). The FCA has regulated credit reference agencies since 2014 with the objectives of protecting consumers, protecting financial markets and promoting competition. TransUnion U.K. (previously Callcredit), Experian and Equifax were granted full FCA authorization in early 2016 and are therefore all required to follow the rules and principles issued by the FCA.

  In 2018, the FCA introduced Open Banking which aims to improve customer experience and to increase competition in the banking sector. Consumers can share transaction data with third parties via application program interfaces ("APIs") to identify best products and take up multi-bank products. As part of Open Banking, the Second Payment Services Directive allows merchants to retrieve a customer's account data from their bank with their consent. The implementation of Open Banking platforms has increased the number of payment service providers available to

consumers beyond traditional banks. TransUnion U.K. is an authorized information services provider under this regime.

- *South Africa*: The National Credit Act of 2005 (the "NCA") and its implementing regulations govern credit bureaus and consumer credit information. The NCA sets standards for filing, retaining and reporting consumer credit information. The NCA also defines consumers' rights with respect to accessing their own information and addresses the process for disputing information in a credit file. The NCA is enforced by The National Credit Regulator who has authority to supervise and examine credit bureaus. In addition, the Protection of Personal Information Act ("POPIA") went into effect on July 1, 2020, with enforcement commencing on July 1, 2021. POPIA regulates the processing of personal information of legal and juristic persons, and imposes compliance obligations and sanctions.
- *India*: The Credit Information Companies Regulation Act of 2005 ("CICRA") requires entities that collect and maintain personal credit information to ensure that it is complete, accurate and protected. Entities must adopt certain privacy principles in relation to collecting, processing, preserving, sharing and using credit information. Data protection is currently covered under provisions of the Information Technology Act of 2000 as well as regulations promulgated by the Reserve Bank of India. In addition, India has pending privacy legislation that proposes to cover personal data and provides for penalties to be paid to the government, compensation to individuals, as well as criminal liability in certain cases.
- *Hong Kong*: Personal Data (Privacy) Ordinance ("PDPO") and The Code of Practice on Consumer Credit Data regulate the operation of consumer credit reference agencies. They prescribe the methods and security controls under which credit providers and credit reference agencies may collect, access and manage credit data. The PDPO was amended in 2021 to provide new powers to the Privacy Commissioner and to make criminal the act of publicly releasing information identifying an individual or organization – a practice known as "doxxing."
- *Brazil*: The Brazilian General Data Protection Law ("LGPD"), went into effect on September 18, 2020. LGPD regulates the processing of personal information and imposes compliance obligations and sanctions comparable to those of GDPR. The sanctions provisions of the LGPD went into effect on August 1, 2021.

Other International Laws

Credit information and credit information companies have also become subject to, directly or indirectly, further governance regulations, such as those historically reserved for banks. We are also subject to various laws and regulations generally applicable to all businesses in the other countries where we operate.

Sustainability

We are dedicated to making meaningful, positive contributions to the world and the communities we serve. We are making an impact through our commitments to advancing underrepresented people, enabling life-changing access to credit in mature and emerging markets, and using trended data to help consumers improve their access to credit.

We focus our environmental, social, and governance ("ESG") efforts on issues that are important to our business and to our key stakeholders. In 2021, we conducted our first global ESG materiality assessment, which confirmed the importance of cybersecurity, privacy, and corporate governance to the continued success of our business. The assessment also confirmed the importance of TransUnion continuing to focus efforts on enhancing financial inclusion, employee wellness, diversity, equity, and inclusion ("DEI"), and climate change.

Climate Change

Climate change continues to be a key issue for companies worldwide. In 2021, in partnership with an external consultant, we completed a survey of our greenhouse gas ("GHG") emissions and designed climate change commitments. We set two climate change targets, reaching operational net zero scope 1 and scope 2 GHG emissions by 2025 and 30 percent reductions on leased real estate scope 3 emissions by 2030, using 2019 as a baseline. Currently, we consider our scope 2 GHG emissions to be those indirect emissions from our owned (as distinct from our leased) properties; however, our approach to measuring, assessing and categorizing our GHG emissions may shift in the future. Currently, our plan for achieving these reduction targets is to utilize renewable energy purchases, an environmentally-friendly cloud migration, and our real estate consolidation strategy. For emissions that TransUnion is unable to reasonably avoid, we expect to mitigate our impact through annual offset purchases. In the fourth quarter of 2022, we completed our first offset and renewable energy credit purchase for our emissions impact for the year.

In 2022, TransUnion began a study of potential climate risks with the assistance of an external consultant. We reviewed industry peer disclosures and best practices. In 2023, we will continue our climate risk study developing a climate risk framework and validating our climate risks with our stakeholders.

Human Capital Management

We employed approximately 12,200 employees at December 31, 2022. Central to our long-term strategy is attracting, developing and retaining the best talent globally with the right skills to drive our success. Our board of directors receives regular updates on human capital topics such as employee retention, engagement and survey results, enterprise compliance, investigations and associate health and safety.

Other than certain employees in Brazil, none of our employees is currently represented by a labor union or has terms of employment that are subject to a collective bargaining agreement. We consider our relationships with our employees to be good and have not experienced any work stoppages.

Diversity Strategy

We see diversity as a source of strength and know that it is essential to our mission, innovation and growth. At TransUnion, we know that diversity helps us win. We have a three-pronged approach to our diversity, equity and inclusion strategy consisting of the following:

- *Hire:* We seek to expand the diversity of our talent pool through a dedicated diversity recruiter, targeted sourcing methods and job postings.
- *Develop:* We cultivate diverse talent internally through development plans and customized programming for underrepresented groups.
- *Promote:* We continue to expand our rigorous pay and promotion practices designed to remove bias, including ongoing pay equity analysis and compensation review, and development opportunities designed to ensure fair and equitable treatment of all employees.

We believe that a critical component of continuing to deliver innovative products to consumers and customers is maintaining diverse and inclusive teams. Detailed below is our progress in advancing diversity in our leadership and associate population in alignment with Sustainability Accounting Standards Board reporting standards. Select workforce diversity statistics for 2022, 2021, and 2020 are as follows:

	For the Year Ended December 31,		
	2022 [5]	2021 [5]	2020
Percent of TransUnion's Worldwide Workforce Based in the United States	41%	46%	51%
Worldwide Gender			
Women Senior Leaders [1]	29%	28%	30%
Women Overall [2]	40%	39%	40%
U.S. Race/Ethnicity [3]			
Black Senior Leaders [1]	4%	4%	3%
Black Overall [2]	8%	9%	9%
Hispanic Senior Leaders [1]	4%	5%	6%
Hispanic Overall [2]	8%	7%	8%
Asian Senior Leaders [1]	13%	12%	10%
Asian Overall [2]	23%	21%	20%
Other Senior Leaders [1,4]	2%	1%	2%
Other Overall [2,4]	2%	2%	2%

1. Senior Leaders include all employees at a Vice President level or above.
2. Overall includes all employees, inclusive of the Senior Leader grouping.
3. U.S. race/ethnicity diversity demographic information includes only U.S. employees who chose to self-identify and excludes those who did not self-identify.
4. Other race/ethnicity includes American Indian or Alaska Native, Native Hawaiian or Other Pacific Islanders, and those employees who disclosed two or more categories.
5. Human capital reporting includes all 2021 acquisitions and 2022 non-divested acquisitions.

Talent Acquisition and Retention

Our talent acquisition and retention strategy is multi-faceted. We aim to recruit the most qualified candidates, and strive for a diverse and well-balanced workforce.

We reward and support employees through competitive pay, benefits, and perquisite programs that allow employees and their families to thrive. Our benefit offerings are designed to meet the varied and evolving needs of a diverse workforce tailored to the variety of businesses and geographies in which we operate.

We continue to support our employees and their families, including by providing child care benefits that provide access to onsite or community centers, enhanced back-up care choices that include personal caregivers, child care referral assistance and child care provider discounts, help with homework and a variety of parenting educational resources. We also provide our employees with access to free mental and behavioral health resources, including on-demand access to the Employee Assistance Program for employees and their dependents. We continue to look for new ways to support our employees and their families.

Employee Engagement, Training and Development

We prioritize and invest in helping our employees grow and build their careers through several training and development programs. These include online, instructor-led and on-the-job learning formats as well as executive talent and succession planning paired with an individualized development approach.

Safety and Wellness

As TransUnion takes its duty to maintain a safe work environment seriously, the health and well-being of associates, customers and visitors remains a top priority. We continue to follow important health and safety guidelines, and implement effective practices to minimize workplace risks.

See our upcoming 2022 Sustainability Report and 2022 Diversity Report for additional information on these topics. Information contained in such reports are not incorporated herein by reference and should not be considered part of this report.

Available Information

Through our corporate website under the heading "About Us - Investor Relations," at http://www.transunion.com, you can access electronic copies of our governing documents free of charge, including our Corporate Governance Guidelines and the charters of the committees of our board of directors. In addition, through our website, you can access the documents we file with the U.S. Securities and Exchange Commission (SEC), including our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K, and all amendments thereto, as soon as reasonably practicable after we file or furnish them. Investors and others should note that TransUnion routinely announces material information to investors and the marketplace using SEC filings, press releases, public conference calls, webcasts and the TransUnion Investor Relations website. While not all of the information that the Company posts to the TransUnion Investor Relations website is of a material nature, some information could be deemed to be material. Accordingly, the Company encourages investors, the media and others interested in TransUnion to review the information that it shares on www.transunion.com/tru. You also may request printed copies of our SEC filings or governance documents, free of charge, by writing to our corporate secretary at the address on the cover of this report. Information contained on our website is not incorporated herein by reference and should not be considered part of this report.

In addition, the SEC maintains an Internet site (www.sec.gov) that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC.

Our corporate headquarters are located at 555 West Adams Street, Chicago, Illinois 60661, and our telephone number is (312) 985-2000.

ITEM 1A. RISK FACTORS

You should carefully consider the following risks as well as the other information included in this report, including "Selected Financial Data," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our financial statements and related notes. Any of the following risks could materially and adversely affect our business, financial condition or results of operations. However, the selected risks described below are not the only risks facing us. Additional risks and uncertainties not currently known to us or those we currently view to be immaterial may also materially and adversely affect our business, financial condition or results of operations.

Risk Factors Summary

The following is a summary of the principal risks and uncertainties described in more detail in this report:

- Our revenues are concentrated in the U.S. financial services and consumer credit industries. When these industries or the broader financial markets experience a downturn, demand for our services and revenues may be adversely affected.
- We are subject to significant competition in the markets in which we operate and we may face significant competition in the new markets that we plan to enter.
- To the extent the availability of free or relatively inexpensive consumer information increases, the demand for some of our services may decrease.
- Our relationships with key long-term customers may be materially diminished or terminated.
- If we are unable to develop successful new services in a timely manner, or if the market does not adopt our new services, our ability to maintain or increase our revenue could be adversely affected.
- If our outside service providers and key vendors are not able to or do not fulfill their service obligations, our operations could be disrupted and our operating results could be harmed.
- There may be further consolidation in our end-customer markets, which may adversely affect our revenues.
- Data security and integrity are critically important to our business, and cybersecurity incidents, including cyberattacks, breaches of security, unauthorized access to or disclosure of our intellectual property or confidential information, business disruption, or the perception that confidential information is not secure, could result in a material loss of business, regulatory enforcement, substantial legal liability and/or significant harm to our reputation.
- We may be unable to adequately anticipate, prevent or mitigate damage resulting from increasingly sophisticated methods of illegal or fraudulent activities committed against us, which could harm our business, financial condition and results of operations and could significantly harm our reputation.
- If we experience system failures, personnel disruptions or capacity constraints, or our customers do not modify their systems to accept new releases of our distribution programs, the delivery of our services to our customers could be delayed or interrupted, which could harm our business and reputation and result in the loss of revenues or customers.
- We could lose our access to data sources which could prevent us from providing our services.
- If we fail to maintain and improve our systems, our data matching technology, and our interfaces with data sources and customers, demand for our services could be adversely affected.
- Our business is subject to various governmental regulations, laws and orders, compliance with which may cause us to incur significant expenses or reduce the availability or effectiveness of our solutions, and the failure to comply with which could subject us to civil or criminal penalties or other liabilities.
- The Consumer Financial Protection Bureau ("CFPB") has supervisory and examination authority over our business and has in the past, and may in the future, initiate enforcement actions with regard to our compliance with federal consumer financial laws. Actions by the CFPB or other regulators against us or our executives could result in increased operating costs, reputational harm, payment of damages and civil monetary penalties, injunctive relief and/or restitution, any of which could have a material adverse effect on our business, results of operations and financial condition.
- Regulatory oversight of our contractual relationships with certain of our customers may adversely affect our business.
- The outcome of litigation, inquiries, investigations, examinations or other legal proceedings in which we are involved, in which we may become involved, or in which our customers or competitors are involved could subject us to significant monetary damages or restrictions on our ability to do business.
- Our results of operations have been materially and adversely impacted and could be materially and adversely impacted in the future by the COVID-19 global pandemic or the outbreak of other highly infectious diseases.

- Our ability to expand our operations in, and the portion of our revenue derived from, markets outside the United States is subject to economic, political and other inherent risks, which could adversely impact our growth rate and financial performance.
- The ongoing military action between Russia and Ukraine could adversely affect our business, financial condition and operating results.
- We may be unable to protect our intellectual property adequately or cost-effectively, which may cause us to lose market share or force us to reduce our prices. We also rely on trade secrets and other forms of unpatented intellectual property that may be difficult to protect.
- We may face claims for intellectual property infringement, which could subject us to monetary damages or limit us in using some of our technologies or providing certain services.
- When we engage in acquisitions, investments in new businesses or divestitures of existing businesses, we face risks that may adversely affect our business.
- We depend, in part, on strategic alliances, joint ventures and acquisitions to grow our business. If we are unable to make strategic acquisitions and develop and maintain these strategic alliances and joint ventures, our growth may be adversely affected.
- We have a substantial amount of debt which could adversely affect our financial position and prevent us from fulfilling our obligations under the debt instruments.
- Despite our current level of indebtedness, we may still be able to incur additional indebtedness. This could further the risks associated with our substantial indebtedness.
- We may not be able to generate sufficient cash to service all of our indebtedness, and may be forced to take other actions to satisfy our obligations under our indebtedness, which may not be successful.
- Our inability to generate sufficient cash flow to satisfy our debt obligations, or to refinance our indebtedness on commercially reasonable terms or at all, would materially and adversely affect our financial position and results of operations and our ability to satisfy our obligations.
- The expected LIBOR phase-out may have unpredictable impacts on contractual mechanics in the credit markets or the broader financial markets, which could have an adverse effect on our results of operations.
- Our stock price has recently been volatile and has declined, and may continue to be volatile and/or decline, regardless of our operating performance.
- Our business and operations are exposed to risks arising from developments and trends associated with climate change and ESG, including risks associated with our own reporting.
- Anti-takeover provisions in our organizational documents might discourage, delay or prevent acquisition attempts for us that you might consider favorable.
- Our ability to pay cash dividends may be limited by the terms of our secured credit facility.
- Economic and other conditions may adversely impact the valuation of our assets resulting in impairment charges that could have a material adverse impact on our results from operations.
- We may not be able to attract and retain the skilled employees that we need to support our business.
- We are subject to losses from risks for which we do not insure.
- If we fail to implement and maintain proper and effective internal controls over financial reporting, our ability to produce accurate financial statements on a timely basis could be impaired, which could cause investors to lose confidence in our reported financial information and have a negative effect on our stock price.
- The continuing impact of "Brexit" may have a negative effect on our business.
- If we experience changes in tax laws or adverse outcomes resulting from examination of our tax returns, it could adversely affect our results of operations.

Risks Related to Our Business

Our revenues are concentrated in the U.S. financial services and consumer credit industries. When these industries or the broader financial markets experience a downturn, demand for our services and revenues may be adversely affected.

Our largest customers, and therefore our business and revenues, are influenced by macroeconomic conditions and are impacted by the availability of credit, the level and volatility of interest rates, inflation, employment levels, consumer confidence and housing demand. In addition, a significant amount of our revenues are concentrated among certain customers, industries,

product offerings and in distinct geographic regions, primarily in the United States. Our 2022 revenue in our U.S. Markets Financial Services vertical and in our Consumer Interactive segment accounted for approximately 33% and 16% of consolidated gross revenues, respectively. If businesses in these industries experience economic hardship, we cannot assure you that we will be able to generate future revenue growth. Our customer base suffers when financial markets experience volatility, liquidity issues and disruption, which has occurred in the past and which could reoccur, and the potential for increased and continuing disruptions going forward, present considerable risks to our business and revenue. Changes in the macroeconomic environment have resulted, and may continue to result, in fluctuations in volumes, pricing and operating margins for our services. In addition, if consumer demand for financial services and products and the number of credit applications decrease, the demand for our services could also be materially reduced. Over the last several months, high inflation levels have had a significant negative impact on our business by decreasing demand for credit due to slower consumer spending on non-essential goods and services and due to the Federal Reserve raising interest rates to combat inflation. Continued inflation and additional interest rate increases could further materially impact our business. These types of disruptions could lead to a decline in the volumes of services we provide our customers and could negatively impact our revenue and results of operations.

We are subject to significant competition in the markets in which we operate and we may face significant competition in the new markets that we plan to enter.

The markets for our services are highly competitive, and we may not be able to compete successfully against our competitors, which could impair our ability to sell our services. We compete on the basis of differentiated solutions, datasets, analytics capabilities, ease of integration with our customers' technology, stability of services, customer relationships, innovation and price. Our regional and global competitors vary in size, financial and technical capability, and in the scope of the products and services they offer. Some of our competitors may be better positioned to develop, promote and sell their products. Larger competitors may benefit from greater cost efficiencies and may be able to win business simply based on pricing. We consistently face downward pressure on the pricing of our products, which could result in reduced prices for certain products, or a loss of market share. Our competitors may also be able to respond to opportunities before we do, by taking advantage of new technologies, changes in customer requirements or market trends.

Our Consumer Interactive segment experiences competition from emerging companies. In the past several years, there has been an influx of other companies offering similar services to ours, free of charge. These developments have resulted in increased competition.

Many of our competitors have extensive customer relationships, including relationships with our current and potential customers. New competitors, or alliances among competitors, may emerge and gain significant market share. Existing or new competitors may develop products and services that are superior to ours or that achieve greater market acceptance. If we are unable to respond to changes in customer requirements as quickly and effectively as our competition, our ability to expand our business and sell our services may be adversely affected.

Our competitors may be able to sell services at lower prices than we do, individually or as part of integrated suites of several related services. This ability may cause our customers to purchase from our competitors rather than from us. Price reductions by our competitors could also negatively impact our operating margins or harm our ability to obtain new long-term contracts or renewals of existing contracts on favorable terms. Additionally, some of our customers may develop products of their own that replace the products they currently purchase from us, which would result in lower revenue.

We also expect that there will be significant competition in the new markets that we enter. We cannot assure you that we will be able to compete effectively against current and future competitors. If we fail to successfully compete, our business, financial condition and results of operations may be adversely affected.

To the extent the availability of free or relatively inexpensive consumer information increases, the demand for some of our services may decrease.

Public and commercial sources of free or relatively inexpensive consumer information have become increasingly available and this trend is expected to continue. Public and commercial sources of free or relatively inexpensive consumer information, including free credit information from lead generation companies and from banks, may reduce demand for our services. Beginning in April 2020, we began offering free credit reports on a weekly basis. To the extent that our customers choose not to obtain services from us and instead rely on information obtained at little or no cost from these public and commercial sources, our business, financial condition and results of operations may be adversely affected.

Our relationships with key long-term customers may be materially diminished or terminated.

We have long-standing relationships with a number of our customers, many of whom could unilaterally terminate their relationship with us or materially reduce the amount of business they conduct with us at any time. Our customer agreements relating to our core credit reporting service offered through our U.S. Markets segment are terminable upon advance written notice (typically ranging from 30 days to six months) by either us or the customer, which provides our customers with the opportunity to renegotiate their contracts with us or to award more business to our competitors.

We also provide our services to business partners who may combine them with their own or other branded services to be offered as a bundle to consumers, governmental agencies and businesses in support of fraud or credit protection, credit monitoring, identity authentication, insurance or credit underwriting, and collections. Some of these partners are the largest providers of credit information or identity protection services to the U.S. consumer market.

Market competition, business requirements, financial condition and consolidation through mergers or acquisitions, could adversely affect our ability to continue or expand our relationships with our customers and business partners. There is no guarantee that we will be able to retain or renew existing agreements, maintain relationships with any of our customers or business partners on acceptable terms or at all, or collect amounts owed to us from insolvent customers or business partners. The loss of one or more of our major customers or business partners could adversely affect our business, financial condition and results of operations.

If we are unable to develop successful new services in a timely manner, or if the market does not adopt our new services, our ability to maintain or increase our revenue could be adversely affected.

In order to keep pace with customer demands for increasingly sophisticated service offerings, to sustain expansion into growth industries and to maintain our profitability, we must continue to innovate and introduce new services to the market. The process of developing new services is complex and uncertain. Our industry solutions require extensive experience and knowledge from within the relevant industry. We must commit significant resources to this effort before knowing whether the market will accept new service offerings. Additionally, our business strategy is dependent on our ability to expand into new markets and to bring new products to market. We may not successfully enter into new markets or execute on our new services because of challenges in planning or timing, technical hurdles, difficulty in predicting market demand, changes in regulation or a lack of appropriate resources. Additionally, even if we successfully develop new products, our existing customers might not accept these new products or new markets might not adopt our products due to operational constraints, high switching costs or general lack of market readiness. Failure to successfully introduce new services to the market could adversely affect our reputation, business, financial condition and results of operations.

If our outside service providers and key vendors are not able to or do not fulfill their service obligations, our operations could be disrupted and our operating results could be harmed.

We depend on a number of service providers and key vendors such as telecommunication companies, software engineers, data processors, software and hardware vendors and providers of credit score algorithms, who are critical to our operations. These service providers and vendors are involved with our service offerings, communications and networking equipment, computer hardware and software and related support and maintenance. Although we have implemented service-level agreements and have established monitoring controls, our operations could be disrupted if we do not successfully manage relationships with our service providers, if they do not perform or are unable to perform agreed-upon service levels, or if they are unwilling to make their services available to us at reasonable prices. If our service providers and vendors do not perform their service obligations, it could adversely affect our reputation, business, financial condition and results of operations.

There may be further consolidation in our end-customer markets, which may adversely affect our revenues.

There has been, and we expect there will continue to be, merger, acquisition and consolidation activity in our customer markets. If our customers merge with, or are acquired by, other entities that are not our customers, or that use fewer of our services, our revenue may be adversely impacted. In addition, industry consolidation could affect the base of recurring transaction-based revenue if consolidated customers combine their operations under one contract, since most of our contracts provide for volume discounts. In addition, our existing customers might leave certain geographic markets, which would no longer require them to purchase certain products from us and, consequently, we would generate less revenue than we currently expect.

Risks Related to Technology and Cybersecurity

Data security and integrity are critically important to our business, and cybersecurity incidents, including cyberattacks, breaches of security, unauthorized access to or disclosure of our intellectual property or confidential information, business disruption, or the perception that confidential information is not secure, could result in a material loss of business, regulatory enforcement, substantial legal liability and/or significant harm to our reputation.

As a global consumer credit reporting agency and provider of risk and information solutions, we collect, store and transmit a large amount of sensitive and confidential consumer information on over one billion consumers, including financial information, personally identifiable information and protected health information. We operate in an environment of significant risk of cybersecurity incidents resulting from unintentional events or deliberate attacks by third parties or insiders, which may involve exploiting highly obscure security vulnerabilities or sophisticated attack methods. These cyberattacks can take many forms, but they typically have one or more of the following objectives, among others:

- obtain unauthorized access to confidential consumer information;
- manipulate or destroy data; or

- disrupt, sabotage or degrade service on our systems.

We experience numerous attempts to access our computer systems, software, networks, data and other technology assets on a daily basis. To date, none of these attempts has resulted in a material data incident or otherwise had any material impact on our business, operations or financial results. However, even immaterial incidents may require us to devote significant attention to these issues. For example, in March 2022, a criminal third party obtained access to a TransUnion South Africa server and certain customer personally identifiable information through misuse of an authorized client's credentials. We promptly initiated our response processes, implemented technical containment measures, engaged cybersecurity and forensic experts and launched an investigation. As a precautionary measure, TransUnion South Africa temporarily took certain elements of our services offline, all of which have been resumed. We continue to work with law enforcement and regulators related to this matter.

The security and protection of non-public consumer information is TransUnion's top priority. We devote significant resources to maintain and regularly upgrade the wide array of physical, technical, and contractual safeguards we employ to provide security around the collection, storage, use, access and delivery of information we have in our possession. We cannot assure you that our systems, databases and services will not be compromised or disrupted in the future, whether as a result of deliberate attacks by malicious actors, breaches due to employee error or malfeasance, or other disruptions during the process of upgrading or replacing computer software or hardware, power outages, computer viruses, telecommunication or utility failures or natural disasters or other catastrophic events. We work to monitor and develop our information technology networks and infrastructure to prevent, detect, address and mitigate the risk of unauthorized access, misuse, computer viruses and other events that could have a security impact.

Further, it is possible that we may acquire a company that has experienced a security incident that the acquired company has yet to discover, investigate and remediate. It is possible that neither the acquired company nor TransUnion may identify the issue in a timely manner and the event could spread more broadly to other parts of TransUnion during the integration effort.

Highly publicized cybersecurity incidents, including the data incident announced by Equifax on September 7, 2017, and more recently, the December 13, 2020 announcement by SolarWinds that its software supply chain was compromised, have heightened consumer, legislative and regulatory awareness of cybersecurity risks. These events continue to embolden individuals or groups to target our systems more aggressively.

The preventive actions we take to address cybersecurity risk, including protection of our systems and networks, may be insufficient to repel or mitigate the effects of cyberattacks in the future as it may not always be possible to anticipate, detect or recognize threats to our systems, or to implement effective preventive measures against all cybersecurity risks. This is because, among other things:

- the techniques used in cyberattacks change frequently and may not be recognized until after the attacks have succeeded;
- cyberattacks can originate from a wide variety of sources, including sophisticated threat actors involved in organized crime, sponsored by nation-states, or linked to terrorist or hacktivist organizations; and
- third parties may seek to gain access to our systems either directly or using equipment or security passwords belonging to employees, customers, third-party service providers or other users.

Unauthorized disclosure, loss or corruption of our data or inability of our customers to access our systems could disrupt our operations, subject us to substantial regulatory and legal proceedings and potential liability, result in a material loss of business and/or significantly harm our reputation.

We may not be able to immediately address the consequences of a cybersecurity incident because a successful breach of our computer systems, software, networks or other technology assets could occur and persist for an extended period of time before being detected due to, among other things:

- the breadth and complexity of our operations and the high volume of transactions that we process;
- the large number of customers, counterparties and third-party service providers with which we do business;
- the proliferation and increasing sophistication of cyberattacks;
- the possibility that a malicious third party compromises the software, hardware or services that we procure from a service provider unbeknownst to both the provider and to TransUnion; and
- the possibility that a third party, after establishing a foothold on an internal network without being detected, might obtain access to other networks and systems.

The extent of a particular cybersecurity incident and the steps that we may need to take to investigate it may not be immediately clear, and it may take a significant amount of time before such an investigation can be completed and full and reliable

information about the incident is known. While such an investigation is ongoing, we may not necessarily know the extent of the harm or how best to remediate it, and certain errors or actions could be repeated or compounded before they are discovered and remediated, any or all of which could further increase the costs and consequences of a cybersecurity incident.

Due to concerns about data security and integrity, a growing number of legislative and regulatory bodies have adopted consumer notification and other requirements in the event that consumer information is accessed by unauthorized persons and additional regulations regarding the use, access, accuracy and security of such data are possible. In the United States, we are subject to federal and state laws that provide for more than 50 disparate notification regimes. In the event of unauthorized access, our failure to comply with the complexities of these various regulations could subject us to regulatory scrutiny and additional liability.

We may be unable to adequately anticipate, prevent or mitigate damage resulting from increasingly sophisticated methods of illegal or fraudulent activities committed against us, which could harm our business, financial condition and results of operations and could significantly harm our reputation.

The defensive measures that we take to manage threats, especially cyber-related threats, to our business may not adequately anticipate, prevent or mitigate harm we may suffer from such threats. Criminals use evolving and increasingly sophisticated methods of perpetrating illegal and fraudulent activities. For example, during the first week of September 2020, TransUnion experienced a series of Distributed Denial of Service (DDoS) attacks. While these attacks did not result in any unauthorized access to data or systems, there was disruption to TransUnion's normal operations including degraded customer response time, intermittent timeouts and degraded internal information technology services utilized by TransUnion associates. TransUnion deploys a number of defensive measures to mitigate DDoS attacks, but persistent attackers can challenge these protections.

Also, in July 2019, TransUnion Limited, a Hong Kong entity in which the Company holds a majority interest, was a victim of a fraud incident that occurred in July 2019 in our Asia Pacific region (the "Fraud Incident") involving employee impersonation and fraudulent requests that successfully targeted TransUnion Limited, which resulted in a series of fraudulently induced wire transfers totaling $17.8 million, a portion of which has been subsequently recovered.

Fraudulent activities committed against us could disrupt our operations, have an adverse effect on our financial results, subject us to substantial legal proceedings and potential liability, result in a material loss of business and/or significantly harm our reputation.

If we experience system failures, personnel disruptions or capacity constraints, or our customers do not modify their systems to accept new releases of our distribution programs, the delivery of our services to our customers could be delayed or interrupted, which could harm our business and reputation and result in the loss of revenues or customers.

Our ability to provide reliable service largely depends on our ability to maintain the efficient and uninterrupted operation of our computer network, systems and data centers, some of which have been outsourced to third-party providers. In addition, we generate a significant amount of our revenues through channels that are dependent on links to telecommunications providers. Our systems, personnel and operations could be exposed to damage or interruption from fire, natural disasters, pandemic illness, power loss, war, terrorist acts, civil disobedience, telecommunication failures, computer viruses, DDoS attacks or human error. We may not have sufficient redundant operations to cover a loss or failure of our systems in a timely manner. Any significant interruption could severely harm our business and reputation and result in a loss of revenue and customers. Additionally, from time to time we send our customers new releases of our distribution programs, some of which contain security updates. Any failure by our customers to install these new releases could expose our customers to computer security risks.

We could lose our access to data sources which could prevent us from providing our services.

Our services and products depend extensively upon continued access to and receipt of data from external sources, including data received from customers, strategic partners and various government and public records repositories. In some cases, we compete with our data providers. Our data providers could stop providing data, provide untimely data or increase the costs for their data for a variety of reasons, including a perception that our systems are insecure as a result of a data security incidents, budgetary constraints, a desire to generate additional revenue or for regulatory or competitive reasons. We could also become subject to increased legislative, regulatory or judicial restrictions or mandates on the collection, disclosure or use of such data, in particular if such data is not collected by our providers in a way that allows us to legally use the data. If we were to lose access to this external data or if our access or use were restricted or were to become less economical or desirable, our ability to provide services could be negatively impacted, which would adversely affect our reputation, business, financial condition and results of operations. We cannot provide assurance that we will be successful in maintaining our relationships with these external data source providers or that we will be able to continue to obtain data from them on acceptable terms or at all. Furthermore, we cannot provide assurance that we will be able to obtain data from alternative sources if our current sources become unavailable.

If we fail to maintain and improve our systems, our data matching technology, and our interfaces with data sources and customers, demand for our services could be adversely affected.

In our markets, there are continuous improvements in computer hardware, network operating systems, programming tools, programming languages, operating systems, data matching, data filtering and other database technologies and the use of the internet. These improvements, as well as changes in customer preferences or regulatory requirements, may require changes in the technology used to gather and process our data and deliver our services. Our future success will depend, in part, upon our ability to:

- internally develop and implement new and competitive technologies;
- use leading third-party technologies effectively;
- respond to changing customer needs and regulatory requirements, including being able to bring our new products to the market quickly; and
- transition customers and data sources successfully to new interfaces or other technologies.

We cannot provide assurance that we will successfully implement new technologies, cause customers or data furnishers to implement compatible technologies or adapt our technology to evolving customer, regulatory and competitive requirements. If we fail to respond, or fail to cause our customers or data furnishers to respond, to changes in technology, regulatory requirements or customer preferences, the demand for our services, the delivery of our services or our market reputation could be adversely affected. Additionally, our failure to implement important updates could affect our ability to successfully meet the timeline for us to generate cost savings resulting from our investments in improved technology. Failure to achieve any of these objectives would impede our ability to deliver strong financial results.

Risks Related to Laws, Regulations and Government Oversight:

Our business is subject to various governmental regulations, laws and orders, compliance with which may cause us to incur significant expenses or reduce the availability or effectiveness of our solutions, and the failure to comply with which could subject us to civil or criminal penalties or other liabilities.

Our businesses are subject to regulation under the FCRA, the GLBA, the DPPA, HIPAA, HITECH, the Dodd-Frank Act, the FTC Act and various other international, federal, state and local laws and regulations. See "Business-Legal and Regulatory Matters" for a description of select regulatory regimes to which we are subject. These laws and regulations, which generally are designed to protect the privacy of the public and to prevent the misuse of personal information available in the marketplace, are complex, change frequently and have tended to become more stringent over time. We already incur significant expenses to ensure compliance with these laws.

Currently, public concern is high with regard to the operation of credit reporting agencies in the United States, as well as the collection, use, accuracy, correction and sharing of personal information, including Social Security numbers, dates of birth, financial information, medical information, department of motor vehicle data and other personal data.

In addition, many consumer advocates, privacy advocates, legislatures and government regulators believe that existing laws and regulations do not adequately protect privacy and have become increasingly concerned with the collection and use of this type of personal information. As a result, five U.S. states have passed comprehensive privacy legislation intended to provide consumers with greater transparency and control over their personal information by providing consumers with certain rights, such as the right to know what personal information is being collected about them, and the right to access, delete, correct, or opt out of the sale of their personal information. The original California Consumer Privacy Act became effective in 2020, with amendments in the California Privacy Rights Act effective in 2023. Similar laws in Colorado, Connecticut, Utah and Virginia are effective over the course of 2023. While these laws include specific exemptions for practices and activities regulated by FCRA, GLBA, HIPAA and DPPA, including our credit reporting business, they apply to other portions of our business that are not regulated by these laws.

Public concern regarding identity theft also has led to more transparency for consumers as to what is in their credit reports. We provide credit reports and scores and monitoring services to consumers for a fee, and this income stream could be reduced or restricted by legislation that requires us to provide these services to consumers free of charge. For example, under U.S. federal law today, we are required to provide consumers with one credit report per year free of charge, and beginning in April 2020, we began offering consumers free weekly credit reports.

The following legal and regulatory developments also could have a material adverse effect on our business, financial condition or results of operations:

- amendment, enactment or interpretation of laws and regulations that restrict the access and use of personal information and reduce the availability or effectiveness of our solutions or the supply of data available to customers;
- changes in governmental, cultural and consumer attitudes in favor of further restrictions on information collection and sharing, which may lead to regulations that prevent full utilization of our solutions;

- failure of data suppliers or customers to comply with laws or regulations, where mutual compliance is required;
- failure of our solutions to comply with current laws and regulations; and
- failure of our solutions to adapt to changes in the regulatory environment in an efficient, cost-effective manner.

Changes in applicable legislation or regulations that restrict or dictate how we collect, maintain, combine and disseminate information, or that require us to provide services to consumers or a segment of consumers without charge, could adversely affect our business, financial condition or results of operations. In the future, we may be subject to significant additional expense to ensure continued compliance with applicable laws and regulations and to investigate, defend or remedy actual or alleged violations. Any failure by us to comply with applicable laws or regulations could also result in significant liability to us, including liability to private plaintiffs as a result of individual or class action litigation, or may result in the cessation of our operations or portions of our operations or impositions of fines and restrictions on our ability to carry on or expand our operations. Moreover, our compliance with privacy laws and regulations and our reputation depend in part on our customers' adherence to privacy laws and regulations and their use of our services in ways consistent with consumer expectations and regulatory requirements. Certain of the laws and regulations governing our business are subject to interpretation by judges, juries and administrative entities, creating substantial uncertainty for our business. We cannot predict what effect the interpretation of existing or new laws or regulations may have on our business. See "Business-Legal and Regulatory Matters."

The Consumer Financial Protection Bureau ("CFPB") has supervisory and examination authority over our business and may initiate enforcement actions with regard to our compliance with federal consumer financial laws. Actions by the CFPB or other regulators against us or our executives could result in increased operating costs, reputational harm, payment of damages and civil monetary penalties, injunctive relief and/or restitution, any of which could have a material adverse effect on our business, results of operations and financial condition.

The CFPB has broad authority over our business. This includes authority to issue regulations under federal consumer financial protection laws, such as under FCRA and other laws applicable to us and our financial customers. The CFPB is authorized to prevent "unfair, deceptive or abusive acts or practices" through its regulatory, supervisory and enforcement authority.

In 2012, credit reporting companies like us became subject to a federal supervision program for the first time under the CFPB's authority to supervise and examine certain non-depository institutions that are "larger participants" of the consumer credit reporting market. The CFPB conducts examinations and investigations, and may issue subpoenas and bring civil actions in federal court for violations of the federal consumer financial laws including FCRA. In these proceedings, the CFPB can seek relief that includes: rescission or reformation of contracts, restitution, disgorgement of profits, payment of damages, limits on activities and civil money penalties of up to $1.0 million per day for knowing violations. The CFPB conducts periodic examinations of us and the consumer credit reporting industry, which could result in new regulations or enforcement actions or proceedings. Actions by the CFPB could result in requirements to alter or cease offering affected products and services, making them less attractive and restricting our ability to offer them.

For example, in January 2017, as part of an agreed settlement with the CFPB, we agreed among other things, to implement certain practice changes in the way we advertise, market and sell products and services offered directly to consumers. In June 2021, we received a Notice and Opportunity to Respond and Advise ("NORA") letter from the CFPB, informing us that the CFPB's Enforcement Division was considering whether to recommend that the CFPB take legal action against us and certain of our executive officers. The NORA letter alleged that we failed to comply with and timely implement a Consent Order issued by the CFPB in January 2017 (the "Consent Order"), and further alleged additional violations related to TransUnion Interactive Inc.'s marketing practices. On April 12, 2022, after failed settlement negotiations with the CFPB related to the matter, the CFPB filed a lawsuit against us, Trans Union LLC, TransUnion Interactive, Inc. (collectively, the "TU Entities") and the former President of our Consumer Interactive business, John Danaher, seeking restitution, civil money penalties, and injunctive relief, among other remedies, and alleging that the TU Entities violated the Consent Order and engaged in deceptive acts and practices in marketing the TransUnion Credit Monitoring product, among other allegations. The CFPB further alleges that Mr. Danaher violated the Consent Order and that we and Trans Union LLC provided substantial assistance to TransUnion Interactive, Inc. in violating the Consent Order and the law. We are currently in active litigation with the CFPB on this matter. As of December 31, 2022, we have an accrued liability of $56.0 million in connection with this matter and there is a reasonable possibility that a loss in excess of the amount accrued may be incurred, and such an outcome could have a material adverse effect on our results of operations and financial condition.

See "FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA - Notes to Consolidated Financial Statements," Note 22, "Contingencies" for information regarding the CFPB matter.

Additionally, in March 2022, we received a NORA letter from the CFPB, informing us that the CFPB's Enforcement Division is considering whether to recommend that the CFPB take legal action against us related to our tenant and employment screening business, TransUnion Rental Screening Solutions, Inc. ("TURSS"). The NORA letter alleges that Trans Union LLC and TURSS violated the FCRA by failing to (i) follow reasonable procedures to assure maximum possible accuracy of information in consumer reports and (ii) disclose to consumers the sources of such information. On July 27, 2022, the CFPB's Enforcement

Division advised us that it had obtained authority to pursue an enforcement action jointly with the FTC. We are currently engaged in active settlement discussions with the CFPB and the FTC regarding this matter. If our ongoing discussions do not result in a negotiated resolution, we expect that the CFPB and the FTC will pursue litigation against Trans Union LLC and TURSS seeking redress, civil monetary penalties and injunctive relief. We cannot provide assurance that the CFPB and the FTC will not ultimately commence a legal action against us in this matter, nor are we able to predict the likely outcome of any such action. As of December 31, 2022, we have recorded an accrued liability for an immaterial amount in connection with this matter. There is a reasonable possibility that a loss in excess of the amount accrued may be incurred, and such an outcome could have a material adverse effect on our results of operations and financial condition.

In August 2022, the TransUnion Entities received a NORA letter from the CFPB, informing us that the CFPB's Enforcement Division is considering whether to recommend that the CFPB take legal action against us following an investigation relating to potential violations of law related to the placement and lifting of security freezes resulting from certain system issues. Should the CFPB commence an action against us, it may seek restitution, disgorgement, civil monetary penalties, injunctive relief or other corrective action. We cannot provide assurance that the CFPB will not ultimately commence a legal action against us in this matter, nor are we able to predict the likely outcome, which could have a material adverse effect on our results of operations and financial condition.

Recently, the consumer reporting industry has been subject to heightened scrutiny. Based in part on public comments by CFPB officials, we believe that this trend is likely to continue and could result in more regulatory and legislative scrutiny of the practices of our industry and additional regulatory enforcement actions and litigation, which could adversely affect our business and results of operations.

Our compliance costs and legal and regulatory exposure could increase materially if we are targeted by the CFPB for additional enforcement actions, or if the CFPB or other regulators enact new regulations, change regulations that were previously adopted, modify through supervision or enforcement past regulatory guidance, or interpret existing regulations in a manner different or stricter than have been previously interpreted. For example, the CFPB recently issued guidance that indicates increased focus on consumer reporting agencies' compliance with the accuracy and dispute obligations under the FCRA with respect to rental information. Although we have committed resources to enhancing our risk and compliance programs, actions by the CFPB or other regulators against us or our current or former executives could result in increased operating costs, reputational harm, payment of damages and civil monetary penalties, injunctive relief and/or restitution, any of which could have a material adverse effect on our business, results of operations and financial condition.

Regulatory oversight of our contractual relationships with certain of our customers may adversely affect our business.

The Office of the Comptroller of the Currency's (the "OCC") guidance to national banks and federal savings associations on assessing and managing risks associated with third-party relationships, which include all business arrangements between a bank and another entity, by contract or otherwise, requires banks to exercise comprehensive oversight throughout each phase of a bank's business arrangement with third-party service providers, and instructs banks to adopt risk management processes commensurate with the level of risk and complexity of its third-party relationships. The OCC expects especially rigorous oversight of third-party relationships that involve certain "critical activities," which include significant bank functions or significant shared services or other activities that could have a major impact on a bank's operations. In light of this guidance, our existing or potential financial services customers subject to OCC regulation may continue to revise their third-party risk management policies and processes and the terms on which they do business with us, which may adversely affect our relationship with such customers.

The outcome of litigation, inquiries, investigations, examinations or other legal proceedings in which we are involved, in which we may become involved, or in which our customers or competitors are involved could subject us to significant monetary damages or restrictions on our ability to do business.

Legal proceedings arise frequently as part of the normal course of our business. These may include individual consumer cases, class action lawsuits and inquiries, investigations, examinations, regulatory proceedings or other actions brought by federal or state authorities or by consumers. The scope and outcome of these proceedings is often difficult to assess or quantify. Plaintiffs in lawsuits may seek recovery of large amounts and the cost to defend such litigation may be significant. There may also be adverse publicity and uncertainty associated with investigations, litigation and orders (whether pertaining to us, our customers or our competitors) that could decrease customer acceptance of our services or result in material discovery expenses. In addition, a court-ordered injunction or an administrative cease-and-desist order or settlement may require us to modify our business practices or may prohibit conduct that would otherwise be legal and in which our competitors may engage. Many of the technical and complex statutes to which we are subject, including state and federal credit reporting, medical privacy and financial privacy requirements, may provide for civil and criminal penalties and may permit consumers to maintain individual or class action lawsuits against us and obtain statutorily prescribed damages. Additionally, our customers might face similar proceedings, actions or inquiries, which could affect their business and, in turn, our ability to do business with those customers. While we do not believe that the outcome of any pending or threatened legal proceeding, investigation, examination or

supervisory activity will have a material adverse effect on our financial position, such events are inherently uncertain and adverse outcomes could result in significant monetary damages, penalties or injunctive relief against us.

See "FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA - Notes to Consolidated Financial Statements," Note 22, "Contingencies" for information regarding our legal proceedings.

Risks Related to Global Operations

Our ability to expand our operations in, and the portion of our revenue derived from, markets outside the United States is subject to economic, political and other inherent risks, which could adversely impact our growth rate and financial performance.

Over the last several years, we have derived a growing portion of our revenues from customers outside the United States, and it is our intent to continue to expand our international operations. We have sales and technical support personnel in numerous countries worldwide. We expect to continue to add personnel internationally to expand our abilities to deliver differentiated services to our international customers. Expansion into international markets will require significant resources and management attention and will subject us to new regulatory, economic and political risks. Moreover, the services we offer in developed and emerging markets must match our customers' demand for those services. Due to price, limited purchasing power and differences in the development of consumer credit markets, there can be no assurance that our services will be accepted in any particular developed or emerging market, and we cannot be sure that our international expansion efforts will be successful. The results of our operations and our growth rate could be adversely affected by a variety of factors arising out of international commerce, some of which are beyond our control. These factors include:

- currency exchange rate fluctuations;
- foreign exchange controls that might prevent us from repatriating cash to the United States;
- difficulties in managing and staffing international offices;
- increased travel, infrastructure, legal and compliance costs of multiple international locations;
- foreign laws and regulatory requirements;
- terrorist activity, natural disasters and other catastrophic events;
- restrictions on the import and export of technologies;
- difficulties in enforcing contracts and collecting accounts receivable;
- longer payment cycles;
- failure to meet quality standards for outsourced work;
- unfavorable tax rules;
- political and economic conditions in foreign countries, particularly in emerging markets;
- the presence and acceptance of varying level of business corruption in international markets;
- varying business practices in foreign countries; and
- reduced protection for intellectual property rights.

For example, reported revenue from our International segment increased 7.7% including the impact of foreign currencies, or 15.0% on a constant currency basis which excludes the impact of foreign currencies. See "Management's Discussion and Analysis of Financial Condition and Results of Operations-Twelve Months Ended December 31, 2022, 2021 and 2020-Revenue-International Segment." As we continue to expand our business, our success will partially depend on our ability to anticipate and effectively manage these and other risks. Our failure to manage these risks could adversely affect our business, financial condition and results of operations.

The ongoing military action between Russia and Ukraine could adversely affect our business, financial condition and operating results.

On February 24, 2022, Russian military forces invaded Ukraine, and sustained conflict and disruption in the region is likely. Although the length, impact and outcome of the ongoing war in Ukraine is highly unpredictable, this conflict could lead to significant market and other disruptions, including significant volatility in commodity prices and supply of energy resources, instability in financial markets, supply chain interruptions, political and social instability, changes in consumer or purchaser preferences as well as increase in cyberattacks and espionage.

Russia's recognition of two separatist republics in the Donetsk and Luhansk regions of Ukraine and subsequent military action against Ukraine have led to an unprecedented expansion of sanction programs imposed by the United States, the European Union, the U.K., Canada, Switzerland, Japan and other countries against Russia, Belarus, the Crimea Region of Ukraine, the so-called Donetsk People's Republic and the so-called Luhansk People's Republic, including, among others:

- blocking sanctions against some of the largest state-owned and private Russian financial institutions (and their subsequent removal from the Society for Worldwide Interbank Financial Telecommunication ("SWIFT") payment system) and certain Russian businesses, some of which have significant financial and trade ties to the European Union;
- blocking sanctions against Russian and Belarusian individuals, including the Russian President, other politicians and those with government connections or involved in Russian military activities; and
- blocking of Russia's foreign currency reserves as well as expansion of sectoral sanctions and export and trade restrictions, limitations on investments and access to capital markets and bans on various Russian imports.

The situation is rapidly evolving as a result of the conflict in Ukraine, and the United States, the European Union, the U.K. and other countries may implement additional sanctions, export controls or other measures against Russia, Belarus and other countries, regions, officials, individuals or industries in the respective territories. Such sanctions and other measures, as well as the existing and potential further responses from Russia or other countries to such sanctions, tensions and military actions, could adversely affect the global economy and financial markets and could adversely affect our business, financial condition and results of operations.

Risks Related to Intellectual Property

We may be unable to protect our intellectual property adequately or cost-effectively, which may cause us to lose market share or force us to reduce our prices. We also rely on trade secrets and other forms of unpatented intellectual property that may be difficult to protect.

Our success depends, in part, on our ability to protect and preserve the proprietary aspects of our technology and services. If we are unable to protect our intellectual property, including trade secrets and other unpatented intellectual property, our competitors could use our intellectual property to market and deliver similar services, decreasing the demand for our services. We rely on the patent, copyright, trademark, trade secret and other intellectual property laws of the United States and other countries, as well as contractual restrictions, such as nondisclosure agreements, to protect and control access to our proprietary intellectual property. These measures afford limited protection, however, and may be inadequate. We may be unable to prevent third parties from using our proprietary assets without our authorization or from breaching any contractual restrictions with us. Enforcing our rights could be costly, time-consuming, distracting and harmful to significant business relationships. Claims that a third party illegally obtained and is using trade secrets can be difficult to prove, and courts outside the United States may be less willing to protect trade secrets. Additionally, others may independently develop non-infringing technologies that are similar or superior to ours. Any significant failure or inability to adequately protect and control our proprietary assets may harm our business and reduce our ability to compete.

We may face claims for intellectual property infringement, which could subject us to monetary damages or limit us in using some of our technologies or providing certain services.

There has been substantial litigation in the United States regarding intellectual property rights in the information technology industry. We cannot be certain that we do not infringe on the intellectual property rights of third parties, including the intellectual property rights of third parties in other countries, which could result in a liability to us. Historically, patent applications in the United States and some foreign countries have not been publicly disclosed until eighteen months following submission of the patent application, and we may not be aware of currently filed patent applications that relate to our products or processes. If patents are later issued on these applications, we may be liable for infringement. In the event that claims are asserted against us, we may be required to obtain licenses from third parties (if available on acceptable terms or at all). Any such claims, regardless of merit, could be time consuming and expensive to litigate or settle, divert the attention of management and materially disrupt the conduct of our business, and we may not prevail. Intellectual property infringement claims against us could subject us to liability for damages and restrict us from providing services or require changes to certain products or services. Although our policy is to obtain licenses or other rights where necessary, we cannot provide assurance that we have obtained all required licenses or rights. If a successful claim of infringement is brought against us and we fail to develop non-infringing products or services, or to obtain licenses on a timely and cost-effective basis, our reputation, business, financial condition and results of operations could be adversely affected.

Risks Related to Our Growth Strategy

When we engage in acquisitions, investments in new businesses or divestitures of existing businesses, we face risks that may adversely affect our business.

We have acquired and may continue to acquire or make investments in businesses that offer complementary services and technologies. Acquisitions may not be completed on favorable terms and acquired assets, data or businesses may not be successfully integrated into our operations. Even if we devote substantial management attention and resources to integrating acquired businesses in order to fully realize the anticipated benefits of such acquisitions, the businesses and assets acquired may not be successful or continue to grow at the same rate as when operated independently or may require greater resources and

investments than we originally anticipated. Acquisitions, such as the acquisitions of Neustar and Sontiq, involve significant risks and uncertainties, including:

- failing to achieve the financial and strategic goals for the acquired business;
- paying more than fair market value for an acquired company or assets;
- failing to integrate the operations and personnel of the acquired businesses in an efficient and timely manner;
- disrupting our ongoing businesses, including loss of sales;
- distracting management focus from our existing businesses;
- assumption of unanticipated or contingent liabilities;
- failing to retain key personnel;
- incurring the expense of an impairment of assets due to the failure to realize expected benefits;
- damaging relationships with employees, customers or strategic partners;
- diluting the share value of existing stockholders; and
- incurring additional debt or reducing available cash to service our existing debt.

We have divested our Healthcare business and may in the future divest certain assets or businesses that no longer fit with our growth strategy. Divestitures involve significant risks and uncertainties, including:

- disrupting our ongoing businesses;
- failure to effectively transfer liabilities, contracts, facilities and employees to buyers;
- reducing our revenues;
- losing key personnel;
- distracting management focus from our existing businesses;
- the possibility that we will become subject to third-party claims arising out of such divestiture;
- indemnification claims for breaches of representations and warranties in sale agreements;
- damaging relationships with employees and customers as a result of transferring a business to new owners; and
- failure to close a transaction due to conditions such as financing or regulatory approvals not being satisfied.

These risks could harm our business, financial condition or results of operations, particularly if they occur in the context of a significant acquisition or divestiture. In addition, changes in laws and regulations following a significant acquisition or divestiture could adversely impact our business, financial condition, results of operations and growth prospects. Acquisitions of businesses having a significant presence outside the United States will increase our exposure to the risks of conducting operations in international markets.

We depend, in part, on strategic alliances, joint ventures and acquisitions to grow our business. If we are unable to make strategic acquisitions and develop and maintain these strategic alliances and joint ventures, our growth may be adversely affected.

An important focus of our business is to identify business partners who can enhance our services and enable us to develop solutions that differentiate us from our competitors. We have entered into several alliance agreements or license agreements with respect to certain of our datasets and services and may enter into similar agreements in the future. These arrangements may require us to restrict our use of certain of our technologies among certain customer industries, or to grant licenses on terms that ultimately may prove to be unfavorable to us, either of which could adversely affect our business, financial condition or results of operations. Relationships with our alliance agreement partners may include risks due to incomplete information regarding the marketplace and commercial strategies of our partners, and our alliance agreements or other licensing agreements may be the subject of contractual disputes. If we or our alliance agreements' partners are not successful in maintaining or commercializing the alliance agreements' services, such commercial failure could adversely affect our business.

In addition, a significant strategy for our international expansion is to establish operations through strategic alliances or joint ventures with local financial institutions and other partners. We cannot provide assurance that these arrangements will be successful or that our relationships with our partners will continue to be mutually beneficial. If these relationships cannot be established or maintained, it could negatively impact our business, financial condition and results of operations. Moreover, our ownership in and control of our foreign investments may be limited by local law.

We also selectively evaluate and consider acquisitions as a means of expanding our business and entering into new markets. We may not be able to acquire businesses we target due to a variety of factors such as competition from companies that are better positioned to make the acquisition. Our inability to make such strategic acquisitions could restrict our ability to expand our business and enter into new markets which would limit our ability to generate future revenue growth. Additionally, given some of our equity interests in various companies, we may be limited in our ability to require or influence such companies to make

acquisitions or take other actions that we believe to be in our or their best interests. Our inability to take such actions could have a material impact on our revenues or earnings.

Risks Related to Our Indebtedness

We have a substantial amount of debt which could adversely affect our financial position and prevent us from fulfilling our obligations under the debt instruments.

As of December 31, 2022, the book value of our debt was approximately $5,670.1 million consisting of outstanding borrowings under Trans Union LLC's senior secured credit facility. We may also incur significant additional indebtedness in the future. Our substantial indebtedness may:

- make it difficult for us to satisfy our financial obligations, including with respect to our indebtedness;
- limit our ability to borrow additional funds for working capital, capital expenditures, acquisitions or other general business purposes;
- limit our ability to use our cash flow or obtain additional financing for future working capital, capital expenditures, acquisitions or other general business purposes;
- require us to use a substantial portion of our cash flow from operations to make debt service payments;
- expose us to the risk of increased interest rates as certain of our borrowings, including Trans Union LLC's senior secured credit facility, are at variable rates of interest;
- limit our ability to pay dividends;
- limit our flexibility to plan for, or react to, changes in our business and industry;
- place us at a competitive disadvantage compared with our less-leveraged competitors; and
- increase our vulnerability to the impact of adverse economic and industry conditions.

In addition, the credit agreement governing Trans Union LLC's senior secured credit facility contains restrictive covenants that may limit our ability to engage in activities that may be in our long-term best interest. Our failure to comply with those covenants could result in an event of default which, if not cured or waived, could result in the acceleration of substantially all of our debt.

Despite our current level of indebtedness, we may still be able to incur additional indebtedness. This could further the risks associated with our substantial indebtedness.

We and our subsidiaries may be able to incur substantial additional indebtedness in the future. The terms of the credit agreement govern our debt limit, but do not prohibit, us or our subsidiaries from incurring additional indebtedness, and any additional indebtedness incurred in compliance with these restrictions could be substantial. If we incur any additional debt, the priority of that debt may impact the ability of existing debt holders to share ratably in any proceeds distributed in connection with any insolvency, liquidation, reorganization, dissolution or other winding-up of us, subject to collateral arrangements. These restrictions will also not prevent us from incurring obligations that do not constitute indebtedness. We also have the ability to request incremental loans on the same terms under the existing senior secured credit facility up to the greater of $1.0 billion and 100% of consolidated EBITDA, and may incur additional incremental loans so long as the senior secured net leverage ratio does not exceed 4.25 to 1.0, subject to certain additional conditions and commitments by existing or new lenders to fund any additional borrowings. If new indebtedness is added to our current debt levels, the related risks that we and our subsidiaries now face could intensify.

We may not be able to generate sufficient cash to service all of our indebtedness, and may be forced to take other actions to satisfy our obligations under our indebtedness, which may not be successful.

Our ability to make scheduled payments due on our debt obligations or to refinance our debt obligations depends on our financial condition and operating performance, which are subject to prevailing economic, industry and competitive conditions and to certain financial, business, legislative, regulatory and other factors beyond our control as discussed above. Our total scheduled principal repayments of debt made in 2022 and 2021 were $114.5 million and $54.8 million, respectively. Our total interest expense for 2022 and 2021 was $230.9 million and $112.6 million, respectively. We may be unable to maintain a level of cash flow from operating activities sufficient to permit us to pay the principal, premium, if any, and interest on our indebtedness.

If our cash flow and capital resources are insufficient to fund our debt service obligations, we could face substantial liquidity problems and could be forced to reduce or delay investments and capital expenditures or to dispose of material assets or operations, seek additional debt or equity capital or restructure or refinance our indebtedness. We may not be able to implement any such alternative measures on commercially reasonable terms or at all and, even if successful, those alternative actions may not allow us to meet our scheduled debt service obligations. The credit agreement governing Trans Union LLC's senior secured credit facility restricts our ability to dispose of assets and use the proceeds from those dispositions and may also restrict our

ability to raise debt or equity capital to be used to repay other indebtedness when it becomes due. We may not be able to consummate those dispositions or to obtain proceeds in an amount sufficient to meet any debt service obligations then due. In addition, under the covenants of the credit agreement governing our senior secured credit facility, TransUnion Intermediate Holdings, Inc. is restricted from making certain payments, including dividend payments to TransUnion, subject to certain exceptions.

Our inability to generate sufficient cash flow to satisfy our debt obligations, or to refinance our indebtedness on commercially reasonable terms or at all, would materially and adversely affect our financial position and results of operations and our ability to satisfy our obligations.

If we cannot make our scheduled debt payments, we will be in default and all outstanding principal and interest on our debt may be declared due and payable, the lenders under Trans Union LLC's senior secured credit facility could terminate their commitments to loan money, Trans Union LLC's secured lenders (including the lenders under Trans Union LLC's senior secured credit facility) could foreclose against the assets securing their borrowings and we could be forced into bankruptcy or liquidation.

The expected LIBOR phase-out may have unpredictable impacts on contractual mechanics in the credit markets or the broader financial markets, which could have an adverse effect on our results of operations.

The United Kingdom Financial Conduct Authority, which regulates LIBOR, intends to cease encouraging or requiring banks to submit rates for the calculation of most LIBOR tenors after June 2023 and is discouraging the use of LIBOR as a benchmark in new contracts. It is unclear whether LIBOR will cease to exist after June 2023 and there is currently no global consensus on what rate or rates will become acceptable alternatives. In the United States, the U.S. Federal Reserve Board-led industry group, the Alternative Reference Rates Committee, selected the Secured Overnight Financing Rate ("SOFR") as an alternative to LIBOR for U.S. dollar-denominated LIBOR-benchmarked obligations. SOFR is a broad measure of the cost of borrowing cash in the overnight United States treasury repo market, and the Federal Reserve Bank of New York has published the daily rate since 2018. Nevertheless, because SOFR is a backward-looking fully secured overnight rate and LIBOR is a forward-looking unsecured rate, SOFR is likely to be lower than LIBOR on most dates, and any spread adjustment applied by market participants to alleviate any mismatch during a transition period will be subject to methodology that remains undefined. Additionally, master agreements or other contracts drafted before consensus is reached on a variety of details related to a transition may not reflect provisions necessary to address it once LIBOR is fully phased out. Essentially all of our outstanding debt is variable-rate debt, and is based on LIBOR, though we have entered into interest rate swap agreements to limit our exposure to changes in LIBOR. The discontinuation of LIBOR and the transition from LIBOR to SOFR or other benchmark rates could have an unpredictable impact on contractual mechanics in the credit markets or result in disruption to the broader financial markets, including causing interest rates under our current or future agreements to perform differently than in the past, which could have an adverse effect on our results of operations.

Risks Related to Ownership of Our Common Stock

Our stock price has recently been volatile and has declined, and may continue to be volatile and/or decline, regardless of our operating performance, and you may not be able to resell shares of our common stock at or above the price you paid or at all.

Our stock price has recently been volatile and has declined due to a number of factors, including the deteriorating macroeconomic environment, changing expectations about our future revenue and operating results, and softening of the forward-looking guidance we have provided. The financial markets have at various times experienced significant price and volume fluctuations that have impacted the stock prices of many companies in the broader markets and in our industry in particular. These broad market and industry-specific fluctuations, as well as deteriorating macroeconomic conditions, could have a material adverse effect on our results of operations, financial condition and stock price. We reconcile the fair value of our reporting units to our market capitalization during our annual goodwill impairment test. A further decrease in our market capitalization could be an indicator that one or more of our reporting units has a goodwill impairment.

This market volatility, as well as general economic, market or political conditions, could adversely affect the market price of our common stock, regardless of our actual operating performance, and you may not be able to resell your shares at or above the price you paid. In addition to the risks described in this section, several factors that could cause the price of our common stock to fluctuate significantly include, among others, the following, most of which we cannot control:

- quarterly variations in our operating results compared to market expectations;
- guidance that we provide to the public, any changes in this guidance or our failure to meet this guidance;
- changes in preferences of our customers;
- announcements of new products or significant price reductions by us or our competitors;
- size of our public float;

- stock price performance of our competitors;
- publication of research reports about our industry;
- changes in market valuations of our competitors;
- fluctuations in stock market prices and volumes;
- default on our indebtedness;
- actions by our competitors;
- changes in senior management or key personnel;
- changes in financial estimates by securities analysts;
- negative earnings or other announcements by us or other credit reporting agencies;
- downgrades in our credit ratings or the credit ratings of our competitors;
- issuances of capital stock or future sales of our common stock or other securities;
- investor perceptions or the investment opportunity associated with our common stock relative to other investment alternatives;
- the public response to press releases or other public announcements by us or third parties, including our filings with the SEC;
- announcements relating to litigation;
- the sustainability of an active trading market for our stock;
- changes in accounting principles;
- global economic, legal and regulatory factors unrelated to our performance; and
- other events or factors, including those resulting from natural disasters, war, acts of terrorism or responses to these events.

In addition, price volatility may be greater if the public float and trading volume of our common stock is low, and the amount of public float on any given day can vary depending on whether our stockholders choose to hold their shares for the long term.

In the past, companies that have experienced volatility in the market price of their stock have been subject to securities class action litigation. We may be the target of this type of litigation in the future. Securities litigation against us could result in substantial costs and divert our management's attention from other business concerns, which could seriously harm our business.

Our business and operations are exposed to risks arising from developments and trends associated with climate change and ESG, including risks associated with our own reporting.

There are inherent climate-related risks wherever business is conducted. Various meteorological phenomena and extreme weather events (including, but not limited to, storms, flooding, drought, wildfire, and extreme temperatures) may disrupt our operations or those of our suppliers, require us to incur additional operating or capital expenditures or otherwise adversely impact our business, financial condition, or results of operations. Climate change may impact the frequency and/or intensity of such events, as well as contribute to chronic physical changes, such as shifting precipitation or temperature patterns or rising sea-levels, which may also impact our operations or infrastructure on which we rely. While we may take various actions to mitigate our business risks associated with climate change, this may require us to incur substantial costs and may not be successful, due to, among other things, the uncertainty associated with the longer-term projections associated with managing climate risks. Any significant failure, compromise, interruption or a significant slowdown of operations, whether as a result of climate change or otherwise, may impair the Company's ability to deliver its products and services. Additionally, we expect to be subject to increased regulations, reporting requirements, standards or expectations regarding the environmental impacts of our business. Changing market dynamics and other global and domestic policy developments also have the potential to disrupt our business, the business of our suppliers and/or customers, or otherwise adversely impact our business, financial condition, or results of operations.

Finally, increased scrutiny regarding ESG practices and disclosures are likely to continue. With this increased focus, public reporting regarding ESG practices is becoming more broadly expected. Such increased scrutiny may result in increased costs, changes in demand, enhanced compliance or disclosure obligations, increased legal exposure or other adverse impacts on our business, financial condition or results of operations. While we have engaged and may engaged in the future in voluntary initiatives and reporting on ESG matters, such initiatives and reporting may not have the desired effect. While we have established ESG practices, including climate-related targets and goals, these targets and goals are based on certain assumptions, estimates and third-party data, and we may not meet such targets or goals on our established timeline or at all. This includes our goals regarding GHG emissions reduction, which we may not meet on our established timeline or at all. Our approach to measuring and assessing our GHG emissions and establishing targets for the reduction of our emissions may ultimately be

deemed to be inconsistent with future regulatory requirements or best practices. Expectations regarding our ESG initiatives and reporting are evolving quickly and are often subject to factors outside of our control. Moreover, actions or statements that we may take based on expectations, assumptions, or third-party information that we currently believe to be reasonable may subsequently be determined to be erroneous or be subject to misinterpretation. Even if this is not the case, our current actions may subsequently be determined to be insufficient or not aligned to best practices by various stakeholders. Our disclosures on these matters, a failure to satisfy evolving stakeholder expectations for ESG practices and reporting, or a failure to meet our commitments or targets on our established timeline may potentially harm our reputation and impact relationships with investors. If our ESG practices, reporting and performance do not meet investor, consumer, or employee, or other stakeholder expectations, or are perceived as not meeting those expectations, our brand, reputation and customer retention may be negatively impacted, and we may be subject to investor or regulator engagement regarding such matters, which could adversely impact our business, financial condition or results of operations.

Anti-takeover provisions in our organizational documents might discourage, delay or prevent acquisition attempts for us that you might consider favorable.

Certain provisions of our third amended and restated certificate of incorporation ("Charter") and fourth amended and restated bylaws may have an anti-takeover effect and may delay, defer or prevent a merger, acquisition, tender offer, takeover attempt or other change of control transaction that a stockholder might consider in its best interest, including those attempts that might result in a premium over the market price for the shares held by our stockholders.

These provisions provide for, among other things:

- the ability of our board of directors to issue one or more series of preferred stock;
- advance notice for nominations of directors by stockholders and for stockholders to include matters to be considered at our annual meetings; and
- certain limitations on convening special stockholder meetings

The anti-takeover provisions discussed above could make it more difficult for a third party to acquire us, even if the third party's offer may be considered beneficial by many of our stockholders. As a result, our stockholders may be limited in their ability to obtain a premium for their shares.

Our ability to pay cash dividends may be limited by the terms of our secured credit facility.

On February 13, 2018, we announced that our board of directors approved a dividend policy pursuant to which we intend to pay quarterly cash dividends on our common stock. The terms of our senior secured credit facility impose certain limitations on our ability to pay dividends. We may, however, declare and pay cash dividends up to an unlimited amount unless a default or event of default exists under the senior secured credit facility. Any determination to pay dividends in the future will be at the discretion of our board of directors and will depend upon results of operations, financial condition, contractual restrictions, restrictions imposed by applicable law and other factors our board of directors deems relevant.

General Risks

Economic and other conditions may adversely impact the valuation of our assets resulting in impairment charges that could have a material adverse impact on our results from operations.

We have significant amounts of goodwill and intangible assets. On a regular basis, we evaluate our assets for impairment based on various factors, including actual operating results and expected trends of projected revenues, profitability and cash flows. As of December 31, 2022, our consolidated balance sheet included goodwill of $5,551.4 million and other net intangibles of $3,675.5 million. We conduct a goodwill impairment test in the fourth quarter of each year, or more frequently if events or circumstances indicate that the carrying value of goodwill may be impaired. We have the option to first perform a qualitative analysis to determine if it is more likely than not that the fair value of a reporting unit is less than its carrying value. If the qualitative analysis indicates that an impairment is more likely than not for any reporting unit, we perform a quantitative impairment test for that reporting unit. Our quantitative impairment test consists of a fair value calculation for each reporting unit that combines an income approach, using the discounted cash flow method, and a market approach, using the guideline public company method. The quantitative impairment test requires the application of a number of significant assumptions, including estimates of future revenue growth rates, EBITDA margins, discount rates, and market multiples. The projected future revenue growth rates and EBITDA margins, and the resulting projected cash flows of each reporting unit are based on historical experience and internal operating plans reviewed by management, extrapolated over the forecast period. Discount rates are determined using a weighted average cost of capital adjusted for risk factors specific to each reporting unit.

We believe the assumptions that we use in our qualitative and quantitative analysis are reasonable and consistent with assumptions that would be used by other marketplace participants. However, such assumptions are inherently uncertain. During times of economic distress, declining demand and declining earnings could lead to us to have less favorable estimates of our future cash flows, discount rates or market multiples. Such changes could lead to lower estimated fair values of our reporting

units, which could lead to a material impairment charge. Through December 31, 2022, we have not recorded a goodwill impairment charge for any of our reporting units. In certain markets where we operate, macroeconomic conditions are unfavorable. If these unfavorable macroeconomic conditions persist longer than we currently expect, or are worse than we currently expect, our estimates of revenue growth rates and EBITDA margins would decline, which could lead to an impairment of goodwill in our United Kingdom reporting unit or other reporting units. See Part II, Item 7, "Management Discussion and Analysis of Financial Condition and Results of Operations - Critical Accounting Estimates - Goodwill" for a further information.

Our results of operations have been materially and adversely impacted and could be materially and adversely impacted in the future by the COVID-19 global pandemic or the outbreak of other highly infectious diseases.

The global spread and unprecedented impact of COVID-19 created significant volatility, uncertainty and economic disruption. The extent to which the COVID-19 pandemic may materially and adversely impact our business, operations, and consolidated financial statements in the future remains uncertain and will depend on numerous evolving factors that we may not be able to accurately predict, including: the duration, scope, severity, and any resurgences of the pandemic; the emergence of new variants; the development, availability, distribution and effectiveness of vaccines; the public's perception of the safety of the vaccines and their willingness to take the vaccines; the continued impact on worldwide macroeconomic conditions, including interest rates, employment rate, consumer confidence, and foreign exchange rates in each of the markets in which we operate; governmental, business, and individuals' actions that have been, and continue to be, taken in response to the pandemic (which could include limitations on or changes to our operations or mandates to provide services); the effect on our customers; changes in customer and consumer demand for our services; the effect on consumer confidence and spending; our ability to sell and provide our services, including the impact of travel restrictions and people working from home; the ability of our customers to pay for our services; the health of, and the effect on, our workforce; and the potential effects on our internal controls, including those over financial reporting, as a result of changes in working environments for our employees and business partners.

During 2020, the economic effect of the COVID-19 pandemic had a material and adverse impact on numerous aspects of our business, including customer demand for our services and solutions in all of our segments.

We may not be able to attract and retain the skilled employees that we need to support our business.

Our success depends on our ability to attract and retain experienced management, sales, research and development, analytics, marketing and technical support personnel. If any of our key personnel were unable or unwilling to continue in their present positions, it may be difficult to replace them and our business could be seriously harmed. If we are unable to find qualified successors to fill key positions as needed, our business could be seriously harmed. The complexity of our services requires trained customer service and technical support personnel. We may not be able to hire and retain such qualified personnel at compensation levels consistent with our compensation structure. Some of our competitors may be able to offer more attractive terms of employment. In addition, we invest significant time and expense in training our employees, which increases their value to competitors who may seek to recruit them. If we fail to retain our employees, we could incur significant expense replacing employees and our ability to provide quality services could diminish, resulting in a material adverse effect on our business.

We are subject to losses from risks for which we do not insure.

For certain risks, we do not maintain insurance coverage because of cost and/or availability. Because we retain some portion of insurable risks, and in some cases retain our risk of loss completely, unforeseen or catastrophic losses in excess of insured limits could materially adversely affect our business, financial condition and results of operations.

If we fail to implement and maintain proper and effective internal controls over financial reporting, our ability to produce accurate financial statements on a timely basis could be impaired, which could cause investors to lose confidence in our reported financial information and have a negative effect on our stock price.

Ensuring that we have adequate internal financial and accounting controls and procedures in place to produce accurate financial statements on a timely basis is a costly and time-consuming effort that needs to be reevaluated frequently. Our management is responsible for establishing and maintaining adequate internal control over financial reporting to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of financial statements for external purposes in accordance with U.S. generally accepted accounting principles. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, within our company will have been detected. Effective internal controls are necessary for us to produce reliable financial reports and are important to prevent fraud. Any failure to maintain or implement new or improved controls over financial reporting could result in additional material weaknesses or result in the failure to detect or prevent material misstatements in our financial statements, which could cause investors to lose confidence in our reported financial information and harm our stock price.

The continuing impact of "Brexit" may have a negative effect on our business.

Following a national referendum and enactment of legislation, the U.K. formally withdrew from the European Union, commonly referred to as "Brexit," and ratified a trade and cooperation agreement governing its future relationship with the European Union. Among other things, the agreement, which became effective in mid-2021, addresses trade, economic arrangements, law enforcement, judicial cooperation and governance. Because the agreement merely sets forth a framework in many respects that requires complex additional bilateral negotiations between the U.K. and the European Union, significant uncertainty remains about how the precise terms of the relationship between the parties will differ from the terms before withdrawal.

Brexit has also led to legal uncertainty and divergent national laws and regulations as the U.K. continues to determine which European Union laws to replace or replicate, which could increase the difficulty and cost of compliance. For example, certain of our U.K. operations previously able to avail themselves of passporting rights under certain European Union directives to provide services and perform activities in member states of the European Union may now have to comply with different European Union requirements. Similarly, new restrictions on movement have required us to adjust how and where we conduct some of our operations and hire and retain key staff in Europe.

We cannot yet predict the full implications of Brexit, including whether it will increase our cost of doing business or otherwise have a negative effect on our financial condition or results of operations, which could reduce the price of our securities. Our United Kingdom region represented approximately 5.4% of our consolidated revenue for the year ended December 31, 2022.

If we experience changes in tax laws or adverse outcomes resulting from examination of our tax returns, it could adversely affect our results of operations.

We are subject to federal, state and local income and other taxes in the United States and in foreign jurisdictions. From time to time the United States federal, state, local and foreign governments make substantive changes to tax rules and the application thereof, which could result in materially different corporate taxes than would be incurred under existing tax law or interpretation and could adversely impact profitability. Governments have strengthened their efforts to increase revenues through changes in tax law, including laws regarding transfer pricing, economic presence and apportionment to determine the tax base.

Consequently, significant judgment is required in determining our worldwide provision for income taxes. Our future effective tax rates and the value of our deferred tax assets could be adversely affected by changes in tax laws. In addition, we are subject to the examination of our income tax returns and other tax returns by the Internal Revenue Service and other tax authorities. We regularly assess the likelihood of adverse outcomes resulting from such examinations to determine the adequacy of our provision for income taxes and reserves for other taxes. Although we believe we have made appropriate provisions for taxes in the jurisdictions in which we operate, changes in tax laws, or challenges from tax authorities under existing tax laws could adversely affect our business, financial condition and results of operations.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Properties

Our corporate headquarters and main data center are located in Chicago, Illinois, in an office building that we own. As of December 31, 2022, we lease space in over 110 other locations, including office space and additional data centers. These locations are geographically dispersed to meet our sales and operating needs. We anticipate that suitable additional or alternative space will be available at commercially reasonably terms for future expansion.

ITEM 3. LEGAL PROCEEDINGS

See Part II, ITEM 8 “FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA - Notes to Consolidated Financial Statements,” Note 22, “Contingencies” for information regarding our legal proceedings.

ITEM 4. MINE SAFETY DISCLOSURES

Not Applicable.

INFORMATION ABOUT OUR EXECUTIVE OFFICERS

Our executive officers, and their positions and ages as of February 14, 2023, are set forth below:

Name	Age	Position
Christopher A. Cartwright	57	President & Chief Executive Officer and Director
Venkat Achanta	50	Executive Vice President, Chief Data & Analytics Officer
Todd M. Cello	47	Executive Vice President, Chief Financial Officer
Steven M. Chaouki	50	President, U.S. Markets and Consumer Interactive
Abhinav (Abhi) Dhar	51	Executive Vice President, Chief Information & Technology Officer
Karen E. Krause	47	Executive Vice President, Chief Strategy and Communications Officer
Timothy J. Martin	52	Executive Vice President, Chief Global Solutions Officer
R. Dane Mauldin	52	Executive Vice President, Chief Operations Officer
Susan W. Muigai	53	Executive Vice President, Chief Human Resources Officer
Heather J. Russell	51	Executive Vice President, Chief Legal Officer
Todd C. Skinner	53	President, International

Christopher A. Cartwright has served as the President & Chief Executive Officer of TransUnion and a member of the Board of Directors since May 2019. He joined the Company in August 2013, previously serving as Executive Vice President, U.S. Information Services, where he helped drive TransUnion's transformation into a global information and insights company as the head of the largest business unit, including providing consumer reports, risk scores, analytical services and decision technology to customers in the U.S. across the financial services, insurance, tenant and employment screening and public sector industries.

Prior to joining TransUnion, Mr. Cartwright was the Chief Executive Officer of Decision Insight Information Group, a portfolio of independent businesses providing real property information, software and services to insurance, finance, legal and real estate professionals in the United States, Canada and Europe. Mr. Cartwright also spent almost 14 years at Wolters Kluwer, a global information services and workflow solutions company, where he held a variety of executive positions of increasing responsibility, culminating in CEO of the Corporate and Financial Services Division and Shared Services, North America. Prior to Wolters Kluwer, he was Senior Vice President, Strategic Planning & Operations for Christie's Inc. and Strategy Consultant for Coopers and Lybrand.

Mr. Cartwright earned his bachelor's degree in business administration and a master's in public accountancy from The University of Texas at Austin. He serves on the Board of Directors of P33 Chicago and the Board of Trustees of the Museum of Science and Industry.

Venkat Achanta has served as Executive Vice President, Chief Data & Analytics Officer for TransUnion since February 2022. Mr. Achanta was appointed to this position following completion of TransUnion's acquisition of Neustar, Inc. in December 2021. He previously served as Executive Vice President and Chief Data & Technology Officer of Neustar, where he led data science, data strategy and technology teams across Neustar. While at Neustar, he helped lead the creation of the OneID platform and technology transformation across all products.

Prior to joining Neustar in 2016, Mr. Achanta was Chief Data Officer and Head of Data and Analytics at Walmart, beginning in 2014, leading all data and analytics delivery platforms across the company globally. While at Walmart, he spearheaded the data fabric, advanced analytics platforms and decision services groups. Prior to Walmart, Mr. Achanta was Global Head of Analytics and Big Data at AIG. Mr. Achanta also has held senior leadership positions in data and analytics at Capital One and Experian.

Mr. Achanta earned his Bachelor of Science degree in Computer Science and Engineering from Andhra University in India and his M.B.A. from UCLA's Anderson School of Management.

Todd M. Cello joined the Company in October 1997 and has held numerous roles with increasing levels of responsibility in the corporate finance department. Mr. Cello has served as our Executive Vice President, Chief Financial Officer since August 2017. Prior to his current role, Mr. Cello served as Senior Vice President and International CFO from August 2015 to August 2017, overseeing financial operations for the International segment. Prior to that, Mr. Cello served as Vice President, Financial Planning and Analysis from January 2009 to August 2015, overseeing the enterprise financial planning and analysis function, where he played a lead role in the two leveraged buyouts of TransUnion in 2010 and 2012 and the initial public offering of TransUnion in 2015. Prior to that, Mr. Cello served as Vice President and U.S. Information Services CFO from October 2005 to

December 2008, overseeing financial operations of the U.S. Information Services segment. Mr. Cello also serves on the University of Illinois at Chicago's College of Business Advisory Council.

Mr. Cello earned his bachelor's degree in Accounting from University of Illinois at Chicago and is a certified public accountant.

Steven M. Chaouki is President, U.S. Markets and Consumer Interactive, overseeing two TransUnion business lines. U.S. Markets provides information and insights to business customers across financial services, insurance, public sector, media and diversified markets. Consumer Interactive provides credit, financial and identity protection services to consumers. He previously held the role of Executive Vice President, Financial Services from 2013 until May 2019, responsible for the company's financial services business, which provides solutions to banks, credit unions, capital markets, financial services resellers, auto lenders and other customers. Before joining TransUnion, Mr. Chaouki held roles at HSBC in card/retail services and auto finance. Mr. Chaouki serves on the boards of MAIA Biotechnology, Inc. (NYSE American: MAIA) and Spring Labs.

Mr. Chaouki earned his bachelor's degree from Boston University and his M.B.A. from the University of Chicago Booth School of Business.

Abhinav (Abhi) Dhar joined the Company in January 2019 as Executive Vice President, Chief Information & Technology Officer. In this role, Mr. Dhar is responsible for all aspects of the company's technology, including strategy, security, applications, operations, infrastructure and delivery of solutions that support TransUnion's global information systems. Prior to TransUnion, Mr. Dhar co-founded Packyge, Inc. in April 2017, a last-mile delivery startup focused on enabling last step in-store digital experiences. Prior to Packyge, he held technology leadership roles at Walgreen Boots Alliance (WBA), a pharmacy retail and wholesale company, including Chief Digital Officer, WBA and Chief Information Officer, Retail Pharmacy USA from November 2016 to April 2017, Chief Information Officer and SVP, Digital Product Management and Innovation from December 2015 to November 2016 and SVP and Chief Information Officer, Walgreens, a pharmacy retail company, from November 2014 to December 2015. Mr. Dhar joined WBA in 2009 as CTO for the Walgreens Digital Division. Prior to joining WBA, Mr. Dhar held roles of increasing technology management responsibility in travel distribution companies.

Mr. Dhar earned his B.E. in Mechanical Engineering from the National Institute of Engineering in Mysore, India and his M.S. in Industrial Engineering from the New Jersey Institute of Technology.

Karen E. Krause has served as Executive Vice President, Chief Strategy and Communications Officer since June 2022. Ms. Krause is responsible for leading the Global Strategy, Communications and Branding functions, with a focus on enabling, facilitating and monitoring our transformation across global platforms and products to achieve our vision and strategy. She brings deep strategy and corporate development expertise in financial services with extensive experience in growing businesses through acquisitions and transforming operations to grow capabilities globally.

Ms. Krause joined TransUnion from JPMorgan Chase, where she served most recently as Global Head of Product Enablement & Delivery, Integrated Payments Product Group from September 2020 to May 2022, Executive Director, Wholesale Payments Strategic Transformation Projects from 2018 to 2020, Executive Director, Treasury Services Business Transformation from 2017 to 2018, and Executive Director, Corporate Strategy from 2014 to 2017. Prior to JPMC, Ms. Krause spent 8 years at S&P Global and previously worked in various strategy and corporate development roles at Goldman Sachs, TCR Private Equity and McKinsey.

Ms. Krause earned her B.S.E. in Finance from The Wharton School at the University of Pennsylvania, where she graduated s*umma cum laude*, and her M.B.A. from Harvard Business School.

Timothy J. Martin has served as Executive Vice President, Chief Global Solutions Officer since May 2019. In this role, Mr. Martin is responsible for managing revenue growth and profitability through the strategy, planning, innovation and commercialization of nearly all of TransUnion's products and solutions globally. He previously held business management roles at TransUnion leading both a number of industry vertical-focused teams and a high growth horizontal solution called the Specialized Risk Group. Prior to joining TransUnion in September 2009, Mr. Martin was President and Chief Operating Officer of HSBC Auto Finance where he had direct profit and loss responsibility for all strategy, business development, sales, marketing, pricing, risk management, underwriting operations, customer service and collections. Prior to joining HSBC, he was a consultant with Booz Allen Hamilton (now PWC Strategy&) from 1998 to 2003, and senior marketing analyst with American Airlines from 1992 to 1996. Mr. Martin serves on the board of Juvenile Diabetes Research Foundation of South Florida and the Child Rescue Coalition.

Mr. Martin earned his B.S. in Management from Purdue University and his M.B.A. from the University of Michigan Business School.

R. Dane Mauldin has served as Executive Vice President, Chief Operations Officer for TransUnion since May 2019. In this role, Mr. Mauldin leads the organization's focus on operations across the enterprise, including vision, planning and execution required throughout the customer journey. He previously held the role of Chief Product Officer from 2013 until May 2019, where he was responsible for content acquisition, analytic discovery, product development and product delivery across the company's global footprint. Mr. Mauldin has an extensive background in the information solutions industry. Prior to joining

TransUnion, he served as Chief Executive Officer of Screening Solutions and Customer Operations for LexisNexis Risk Solutions, a division of Reed Elsevier. Prior roles at LexisNexis included Vice President of Total Customer Experience and Vice President of Collections Market Planning. He also held management positions at Commercial Financial Services and Experian.

Mr. Mauldin earned his bachelor's degree in Journalism from the University of Oklahoma.

Susan W. Muigai has served as Executive Vice President, Chief Human Resources Officer since 2021. She is responsible for leading TransUnion's human resource strategy and function, and nurturing an inclusive, high-performance culture to help TransUnion achieve its vision and strategy. Ms. Muigai brings deep expertise in talent strategy with an extensive background in global HR, human capital management, organizational leadership, diversity and inclusion, legal and compliance, business transformation and more. She previously spent 16 years at Walmart, based in the U.S., Canada and India, serving as Senior Vice President, People from March 2020 to September 2021, Executive Vice President People/Corporate Affairs, Walmart Canada from August 2016 to August 2020, Senior Vice President People, Walmart Canada from January 2016 to July 2016, Vice President People, Walmart Canada from February 2015 to December 2015, Vice President, International Real Estate and Vice President International Real Estate, Walmart International Real Estate from March 2014 to February 2015, Senior Vice President Legal, General Counsel & Chief Ethics Officer, Walmart India from November 2012 to March 2014, Vice President Audit, Walmart Canada from September 2009 to October 2012, and Senior Director, Risk Management, Walmart Canada from June 2005 to September 2009. She previously worked at Lang Michener LLP.

Ms. Muigai earned her Bachelor of Law from the University of Windsor in Canada, and her Master of Law in International Business from the University of London. She serves on the Board of Breakfast Club of Canada and previously served on the boards of MassMart Holdings Ltd and the Walmart Foundation.

Heather J. Russell is Executive Vice President, Chief Legal Officer of TransUnion. Ms. Russell is an accomplished legal executive with more than 25 years of diverse experience across the global financial services and technology sectors. She is responsible for legal, risk, compliance, government and regulatory relations, corporate governance, consumer privacy and ESG functions for TransUnion and its subsidiaries around the world. Prior to joining the Company in 2018, Ms. Russell was a partner at the law firm of Buckley, LLP, from October 2016 until May 2018, where she led the firm's Financial Institutions Regulation, Supervision and FinTech practices. Previously, she served as Executive Vice President, Chief Legal Officer and Corporate Secretary at Fifth Third Bank from September 2015 until July 2016. Prior to that, Ms. Russell spent four years as Managing Director and Global Head of Public Policy and Regulatory Affairs at Bank of New York Mellon, five years as Senior Vice President and Associate General Counsel at Bank of America and eight years at Skadden in Washington, D.C. and London focused on financial services, corporate finance, and mergers and acquisitions.

Ms. Russell earned her B.A. from the College of William & Mary and her J.D. with honors from American University's Washington College of Law, where she received the Outstanding Graduate Award. Ms. Russell serves on the board of directors of the U.S. Chamber of Commerce, the world's largest business organization, representing the interests of over three million businesses and organizations. She also serves on the boards of directors of the Chicago Council on Global Affairs and Illinois Legal Aid Online.

Todd C. Skinner has served as President, International since August 2021 and is responsible for leading TransUnion's growth across international markets. Mr. Skinner has nearly 30 years of experience delivering information solutions at leading global companies. He joined TransUnion in 2014, previously serving as TransUnion's Regional President of Canada, Latin American and Caribbean. Prior to joining TransUnion, Mr. Skinner was the President of First Canadian Title Default Solutions, a technology recovery business. Previously, he served as Chief Credit Officer and Chief Operations Officer for Retail Banking and Wealth Management at HSBC. He also served as President and Chief Executive Officer for HSBC Financial, an HSBC subsidiary that operated in consumer finance, private label credit card financing, MasterCard, wholesale mortgage lending, mortgage brokering and full spectrum auto finance.

Mr. Skinner earned his bachelor's of commerce from St. Mary's University and his M.B.A. from the Kellogg-Schulich Executive M.B.A. He serves as TransUnion's representative on the Global Board of the U.S.-India Business Council (USIBC) and is on the Board of Directors for Buro De Credito and Cliffside Capital.

Our executive officers are elected annually by our board of directors. There are no family relationships among any of the Company's executive officers.

PART II

ITEM 5. MARKET FOR THE REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Market Information

Our common stock has been listed on The New York Stock Exchange under the symbol "TRU" since June 25, 2015.

Holders of Record

As of January 31, 2023, we had 17 stockholders of record. We have a greater number of beneficial owners of our stock who own their shares through brokerage firms and other nominees.

Recent Sales of Unregistered Securities

None.

Issuer Purchases of Equity Securities

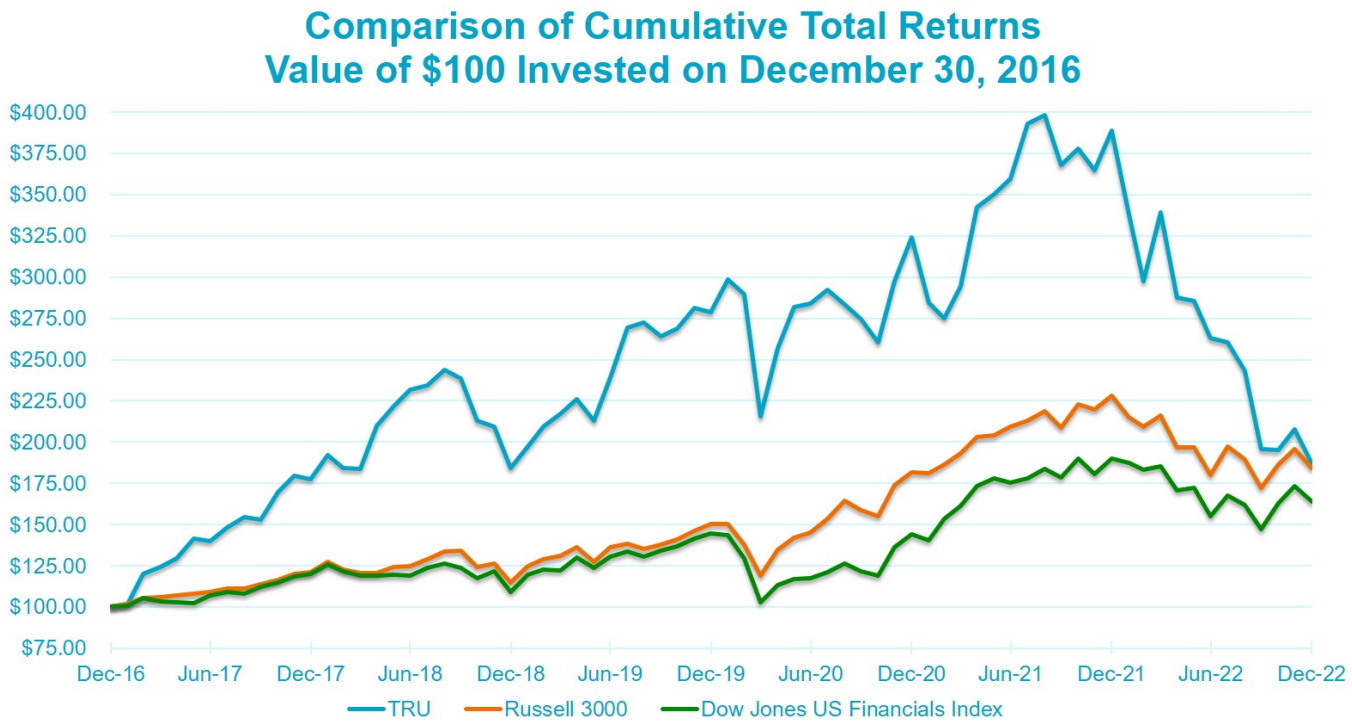
Period	Total Number of Shares Purchased[1]	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs[2]
October 1 to October 31	12,180	$ 55.73	—	$ 166.5
November 1 to November 30	84	56.60	—	$ 166.5
December 1 to December 31	59,096	61.34	—	$ 166.5
Total	71,360	$ 60.37	—	

1. Represents shares that were repurchased from employees for withholding taxes for share-based awards pursuant to the Company's equity compensation plans.
2. On February 13, 2017, our board of directors authorized the repurchase of up to $300.0 million of our common stock through February 13, 2020. Our board of directors removed the three-year time limitation on February 8, 2018. Prior to the fourth quarter of 2017, we had purchased approximately $133.5 million of common stock under the program and may purchase up to an additional $166.5 million. Additional repurchases may be made from time to time at management's discretion at prices management considers to be attractive through open market purchases or through privately negotiated transactions, subject to availability. Open market purchases will be conducted in accordance with the limitations set forth in Rule 10b-18 of the Exchange Act and other applicable legal requirements. We have no obligation to repurchase additional shares, and the timing, actual number and value of the shares that are repurchased, if any, will be at the discretion of management and will depend on a number of factors, including market conditions, the cost of repurchasing shares, the availability of alternative investment opportunities, liquidity, and other factors deemed appropriate. Repurchases may be suspended, terminated or modified at any time for any reason. Any repurchased shares will have the status of treasury shares and may be used, if and when needed, for general corporate purposes.

Performance Graph

This performance graph shall not be deemed "soliciting material" or to be "filed" with the SEC for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liabilities under that Section, and shall not be deemed to be incorporated by reference into any filing of TransUnion under the Securities Act of 1933, as amended, or the Exchange Act.

The following graph shows a comparison of cumulative total shareholder return for the Company's common stock, the Russell 3000 and the Dow Jones U.S. Financials Index. The graph assumes that $100 was invested at market close on December 31, 2016, in each of the Company's common stock, the Russell 3000 and the Dow Jones U.S. Financial Index. The cumulative total returns for the Russell 3000 and the Dow Jones U.S. Financial Index assume reinvestment of dividends. The stock price performance of the following graph is not necessarily indicative of future stock price performance.



ITEM 6. RESERVED

Reserved

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis of TransUnion's financial condition and results of operations is provided as a supplement to, and should be read in conjunction with Part I, Item 1A, "Risk Factors," and Part II, Item 8, "Financial Statements and Supplementary Information," including TransUnion's audited consolidated financial statements and the accompanying notes. In addition to historical data, this discussion contains forward-looking statements about our business, operations and financial performance based on current expectations that involve risks, uncertainties and assumptions. Our actual results may differ materially from those discussed in the forward-looking statements as a result of various factors, including but not limited to those discussed in "Cautionary Notice Regarding Forward-Looking Statements" and Part I, Item 1A, "Risk Factors."

References in this discussion and analysis to the "Company," "we," "us," and "our" refer to TransUnion and its direct and indirect subsidiaries, including TransUnion Intermediate Holdings, Inc.

Overview

TransUnion is a leading global information and insights company that makes trust possible between businesses and consumers, working to help people around the world access opportunities that can lead to a higher quality of life. That trust is built on TransUnion's ability to deliver safe, innovative solutions with credibility and consistency. We call this Information for Good.

Grounded in our heritage as a credit reporting agency, we have built robust and accurate databases of information for a large portion of the adult population in the markets we serve. We use our data fusion methodology to link and match an increasing set of disparate data to further enrich our database. We use this enriched data, combined with our expertise, to continuously develop more insightful solutions for our customers, all in accordance with global laws and regulations. Because of our work, organizations can better understand consumers in order to make more informed decisions, and earn consumer trust through great, personalized experiences, and the proactive extension of the right opportunities, tools and offers. In turn, we believe consumers can be confident that their data identities will result in better offers and opportunities.

We provide solutions that enable businesses to manage and measure credit risk, market to new and existing customers, verify consumer identities, mitigate fraud, and effectively manage call center operations. Businesses embed our solutions into their process workflows to deliver critical insights and enable effective actions. Consumers use our solutions to view their credit profiles and access analytical tools that help them understand and manage their personal financial information and take precautions against identity theft. Our solutions are based on a foundation of data assets across financial, credit, alternative credit, identity, phone activity, digital device information, marketing, bankruptcy, lien, judgment, insurance claims, automotive and other relevant information obtained from thousands of sources including financial institutions, private databases and public records repositories.

Our addressable market includes the global data and analytics market, which continues to grow as companies around the world increasingly recognize the benefits of data and analytics-based decision making, and as consumers recognize the important role that their data identities play in their ability to procure goods and services. We leverage our differentiated capabilities in order to serve a global customer base across multiple geographies and industry verticals.

Segments

We manage our business and report our financial results in three reportable segments: U.S. Markets, International and Consumer Interactive. See Part II, Item 8 "Notes to Consolidated Financial Statement,", Note 20, "Reportable Segments" for additional information.

U.S. Markets

The U.S. Markets segment provides consumer reports, actionable insights and analytics to businesses. These businesses use our services to acquire customers, assess consumers' ability to pay for services, identify cross-selling opportunities, measure and manage debt portfolio risk, collect debt, verify consumer identities and mitigate fraud risk. The core capabilities and delivery methods in our U.S. Markets segment allow us to serve a broad set of customers across industries.

International

The International segment provides services similar to our U.S. Markets segment to businesses in select regions outside the United States. Depending on the maturity of the credit economy in each country, services may include credit reports, analytics and solutions services, and other value-added risk management services. In addition, we have insurance, business and automotive databases in select geographies. These services are offered to customers in a number of industries including financial services, insurance, automotive, collections, and communications, and are delivered through both direct and indirect channels. The International segment also provides consumer services similar to those offered by our Consumer Interactive segment that help consumers proactively manage their personal finances and take precautions against identity theft.

Consumer Interactive

The Consumer Interactive segment provides solutions that help consumers manage their personal finances and take precautions against identity theft. Services in this segment include paid and free credit reports, scores and freezes, credit monitoring, identity protection and resolution, and financial management for consumers. The segment also provides solutions that help businesses respond to data breach events. Our products are provided through user-friendly online and mobile interfaces and are supported by educational content and customer support. Our Consumer Interactive segment serves consumers through both direct and indirect channels.

Corporate

In addition, Corporate provides support services for each of the segments, holds investments, and conducts enterprise functions. Certain costs incurred in Corporate that are not directly attributable to one or more of the segments remain in Corporate. These costs are typically enterprise-level costs and are primarily administrative in nature.

Factors Affecting Our Results of Operations

The following are certain key factors that affect, or have recently affected, our results of operations:

Macroeconomic and Industry Trends

Our revenues and results of operations have been and can be significantly influenced by general macroeconomic conditions, including but not limited to, interest rates, inflation, housing demand, the availability of credit and capital, employment levels, consumer confidence and the impact of the global COVID-19 pandemic.

During 2020, the economic effect of the COVID-19 pandemic had a material and adverse impact on numerous aspects of our business, including customer demand for our services and solutions in all of our segments. During 2021, in the markets where we compete, we saw generally improving macroeconomic conditions, driven by an increase in gross domestic product ("GDP"), interest rates that remained near historic lows, and continuing increases in employment levels. During 2022, the labor market remained strong and supply chain constraints began to ease, while persistent inflation, rapidly increasing energy prices, and consecutive interest rate increases by the Federal Reserve have all contributed to constrained economic activity. In addition, a slowing housing market, coupled with lower GDP growth, softening consumer confidence and global geopolitical events added to the deterioration of global macroeconomic conditions and increasing recession fears compared to the post-pandemic rebound of 2021. These slowing macroeconomic conditions had a more pronounced impact in our developed markets compared to our emerging markets, although the impact of exchange rates had a significant impact on our International segment. The impact of higher interest rates has been particularly acute in the housing sector, where higher borrowing rates significantly impacts both home affordability, driving down purchase activity, and demand for mortgage loan refinancing. The impact of higher interest rates on slowing aggregate demand is expected to result in increased unemployment levels over the next year, which is likely to reduce consumer demand for credit. These dynamics impact the comparability of our results of operations, including our revenue and expense, between the periods presented below.

The ongoing uncertainty and the unpredictable nature of the macroeconomic environment could have a material adverse impact on various aspects of our business in the future, including our stock price, results of operations and financial condition, including the carrying value of our long-lived assets such as goodwill and intangible assets.

Effects of Inflation

We believe that inflation has had a significant negative impact on our business and results of operations, including decreased demand for our services resulting from the Federal Reserve and other central banks consistently raising interest rates to combat inflation, slowing consumer spending on non-essential goods and services, and consequently lower demand for credit, especially during the last half of the year. The impact of continued elevated levels of inflation and the resulting response by the Federal Reserve and other central banks to raise interest rates could have a material adverse impact on various aspect of our business in the future.

Recent Developments

The following developments impact the comparability of our balance sheets, results of operations and cash flows between years:

Since the acquisition of Neustar, Inc. ("Neustar") on December 1, 2021, we have reflected all Neustar revenue in the Emerging Verticals within our U.S. Markets segment. Beginning in the fourth quarter 2022, we integrated the Neustar sales team into our legacy vertically-aligned sales teams, and a portion of the Neustar revenue is now included in the Financial Services vertical. We have recast the revenue reported for each vertical in U.S. Markets in the historical periods to be consistent with the fourth quarter 2022 presentation, which provides comparability among the periods. This recast has no net impact on our overall financial statements in 2022.

Since December 1, 2021, we have completed the acquisition of three businesses that collectively materially affected our results of operations in 2022 and the comparability of results to prior year periods. See Part I, Item 1, Note 2 "Business Acquisitions" for further information about these transactions.

On December 30, 2022, we completed the previously announced sale of the non-core businesses of Verisk Financial Services ("VF"), the financial services business unit we acquired from Verisk Analytics, Inc. We classified the results of operations of these non-core businesses as discontinued operations, net of tax, in the consolidated statements of income since the acquisition in April 2022. Upon the sale, we received total proceeds of $173.9 million, consisting of $103.6 million in cash, and a note receivable with a face value of $72.0 million and a fair value of $70.3 million. The purchase price is subject to certain customary adjustments. We recognized a $7.5 million gain on the sale of these businesses, which is included in discontinued operations, net of tax.

On December 30, 2022, we prepaid $200.0 million of our Senior Secured Term Loan B-6, funded from our cash-on-hand. On January 31, 2022, we prepaid $400 million of our Senior Secured Term Loan B-6, funded from our cash-on-hand. We also made prepayments of our Senior Secured Term Loans in 2021 and 2020 of $85.0 million in March 2021 and $150.0 million in December 2020 both funded by cash-on-hand. These transactions affect the comparability of interest expense between 2022, 2021, and 2020, as further discussed in "Results of Operations - Non-Operating Income and (Expense) - Interest Expense" below.

On November 16, 2022, we entered into new interest rate swap agreements with various counterparties that effectively fix our LIBOR exposure on a portion of our Senior Secured Term Loan or similar replacement debt. These swaps replaced other swaps that expired in December 30, 2022. The new swaps commenced on December 30, 2022, and expire on December 31, 2024, with a current aggregate notional amount of $1,320.0 million that amortizes each quarter. The swaps require TransUnion to pay fixed rates varying between 4.4105% and 4.4465% in exchange for receiving a variable rate that matches the variable rate on our loans. We have designated these swap agreements as cash flow hedges.

On April 12, 2022, after failed settlement negotiations with the Consumer Financial Protection Bureau ("CFPB") regarding a certain regulatory matter, the CFPB filed a lawsuit against us, Trans Union, LLC, TransUnion Interactive, Inc. and our former President of Consumer Interactive. As of December 31, 2022, we have an accrued liability of $56.0 million, compared with $26.5 million as of December 31, 2021, in connection with this matter and there is a reasonable possibility that a loss in excess of the amount accrued may be incurred, and such an outcome could have a material adverse effect on our results of operations and financial condition. However, any possible loss or range of loss in excess of the amount accrued is not reasonably estimable at this time. In addition, we will incur increased costs litigating this matter. See Part I, Item 1, "Notes to Unaudited Consolidated Financial Statements," Note 22, "Contingencies," for further information about this matter.

On January 24, 2022, we reached a tentative class settlement with the plaintiffs in *Ramirez v. TransUnion LLC*, which required court approval. Accordingly, we revised the amount of the probable loss that we previously estimated, resulting in a reduction of our estimated liability and partially offsetting insurance receivable, and a corresponding net reduction recorded in selling, general and administrative expense for the year-end December 31, 2021. On December 19, 2022, the court entered final approval of the class settlement and we paid the settlement amount to the plaintiffs on January 20, 2023, resulting in a full resolution of this matter.

On December 23, 2021, we entered into a tranche of interest rate swap agreements with various counterparties that effectively fix our LIBOR exposure on a portion of our Senior Secured Term Loan or similar replacement debt. The tranche commenced on December 31, 2021, and expires on December 31, 2026, with a current aggregate notional amount of $1,584.0 million that amortizes each quarter. The tranche requires us to pay fixed rates varying between 1.428% and 1.4360% in exchange for receiving a variable rate that matches the variable rate on our loans. We have designated these swap agreements as cash flow hedges.

On December 17, 2021, we completed the sale of our Healthcare business. The Healthcare business met the criteria for discontinued operations at December 31, 2021, as the sale represented a strategic shift in our business that will have a major effect on our results of operations. The results of operations are classified as discontinued operations, net of tax, in our consolidated statement of income for all periods presented. Discontinued operations, net of tax, also includes a gain on the divestiture of the Healthcare business of $982.5 million, net of tax, in the consolidated statements of income for 2021. All tables and discussions below exclude the impact of the Healthcare business.

On December 1, 2021, we entered into an agreement to amend certain provisions of the Senior Secured Credit Facility and exercise our right to draw additional debt in an amount of $3,100.0 million, less original issue discount and deferred financing fees of $7.8 million and $43.6 million, respectively. Proceeds from the incremental loan on the Senior Secured Credit Facility were used to finance the acquisition of Neustar.

On December 1, 2021, we entered into a Second Lien Credit Agreement to obtain term loans in an aggregate amount of $640.0 million (the "Second Lien Term Loan"), less original issue discount and deferred financing fees of $3.2 million and

$14.3 million, respectively, used to fund the acquisition of Sontiq. On December 23, 2021, we fully repaid the Second Lien Term Loan using a portion of the proceeds from our sale of the Healthcare business. As a result of the prepayment, we expensed the unamortized original issue discount and deferred fees to other income and expense in the consolidated statement of income.

On March 10, 2020, we entered into two tranches of interest rate swap agreements with various counterparties that effectively fix our LIBOR exposure on a portion of our Senior Secured Term Loans or similar replacement debt. The first tranche commenced on June 30, 2020, with an initial notional amount of $1,150.0 million that amortized each quarter. The first tranche required us to pay fixed rates varying between 0.5200% and 0.5295% in exchange for receiving a variable rate that matches the variable rate on our loans and expired on June 30, 2022. The second tranche commenced on June 30, 2022, and expires on June 30, 2025, with a current aggregate notional amount of $1,100.0 million that amortizes each quarter after it commences. The second tranche requires us to pay fixed rates varying between 0.9125% and 0.9280% in exchange for receiving a variable rate that matches the variable rate on our loans. We have designated these swap agreements as cash flow hedges.

Recent Acquisitions

We selectively evaluate acquisitions as a means to expand our business and to enter new markets. Since January 1, 2020, we have completed the following acquisitions, including those that impact the comparability of our results between periods:

- On April 8, 2022, we acquired 100% of the equity of the entities that comprised VF. We retained the leading core businesses of Argus, and divested the remaining non-core businesses on December 30, 2022. Argus is relied upon by leading financial institutions, payments providers, and retailers worldwide for competitive studies, predictive analytics, models, and advisory services to provide a clear perspective on where their business stands today and to best position them for success in the future. The results of operations of Argus are included in the U.S. Markets segment in our consolidated statements of income since the date of the acquisition. See Item 8, “Notes to Consolidated Financial Statements,” Note 2, “Business Acquisitions,” Note 3 “Discontinued Operations,” for additional information.
- On December 1, 2021, we acquired 100% of the equity of Neustar. Neustar, a premier identity resolution company with leading solutions in Marketing, Risk and Communications, enables customers to build connected consumer experiences by combining decision analytics with real-time identity resolution services driven by its OneID platform. The results of operations of Neustar are included in Financial Services and Emerging Verticals as part of our U.S. Markets segment in our consolidated statements of income since the date of the acquisition. See Item 8, “Notes to Consolidated Financial Statements,” Note 2, “Business Acquisitions.”
- On December 1, 2021, we acquired 100% of the equity of Sontiq. Sontiq, a leader in digital identity protection and security, provides solutions including identity monitoring, restoration, and response products and services to help empower consumers and businesses to proactively protect against identity theft and cyber threats. The results of operations of Sontiq are included in the Consumer Interactive segment in our consolidated statements of income since the date of the acquisition. See Item 8, “Notes to Consolidated Financial Statements,” Note 2, “Business Acquisitions,” for additional information.
- On October 14, 2020, we acquired 100% of the equity of Tru Optik Data Corp (“Tru Optik”). Tru Optik uses its custom audience-building platform to deliver predictive scoring to improve the performance of custom digital marketing campaigns. The results of operations of Tru Optik are included as part of our U.S. Markets segment in our consolidated statements of income since the date of the acquisition.
- On August 14, 2020, we acquired 100% of the equity of Signal Digital, Inc. (“Signal”). Signal is a digital marketing company that provides tag management, data collection, and onboarding capabilities to customers for activation in the marketing ecosystem. The results of operations of Signal, are included as part of our U.S. Markets segment in our consolidated statements of income since the date of the acquisition.

Key Components of Our Results of Operations

Revenue

We derive and report revenue for our three reportable segments, U.S. Markets, International and Consumer Interactive. Within the U.S. Markets segment, we report and disaggregate revenue by vertical, which consists of our Financial Services and Emerging verticals. Revenue from our recent acquisition of Neustar is partially included in both verticals. Revenue from our recent acquisition of Argus is included in the Financial Services vertical. Within the International segment, we disaggregate revenue by regions, which consists of Canada, Latin America, the United Kingdom, Africa, India, and Asia Pacific. For our Consumer Interactive segment, we do not disaggregate revenue. Revenue from our recent acquisition of Sontiq is included in our Consumer Interactive segment.

Cost of Services

Costs of services include data acquisition and royalty fees, personnel costs related to our databases and software applications, consumer and call center support costs, hardware and software maintenance costs, telecommunication expenses and occupancy costs associated with the facilities where these functions are performed.

Selling, General and Administrative

Selling, general and administrative expenses include personnel-related costs for sales, administrative and management employees, costs for professional and consulting services, advertising and occupancy and facilities expense of these functions.

Non-Operating Income and Expense

Non-operating income and expense includes interest expense, interest income, earnings from equity-method investments, dividends from cost-method investments, fair-value adjustments of equity-method and Cost Method investments, if any, expenses related to successful and unsuccessful business acquisitions, loan fees, debt refinancing expenses, certain acquisition-related gains and losses and other non-operating income and expenses.

Results of Operations—Twelve Months Ended December 31, 2022, 2021 and 2020

For the twelve months ended December 31, 2022, 2021 and 2020, our results of operations were as follows:

	Twelve Months Ended December 31,			Change			
				2022 vs. 2021		2021 vs. 2020	
	2022	2021	2020	$	%	$	%
Revenue	$ 3,709.9	$ 2,960.2	$ 2,530.6	$ 749.7	25.3 %	$ 429.6	17.0 %
Operating expenses							
Cost of services (exclusive of depreciation and amortization below)	1,222.9	991.6	853.9	231.3	23.3 %	137.7	16.1 %
Selling, general and administrative	1,337.4	943.9	829.7	393.5	41.7 %	114.2	13.8 %
Depreciation and amortization	519.0	377.0	346.8	142.0	37.7 %	30.3	8.7 %
Total operating expenses	$ 3,079.3	$ 2,312.5	$ 2,030.4	$ 766.8	33.2 %	$ 282.1	13.9 %
Operating income	$ 630.5	$ 647.7	$ 500.3	$ (17.2)	(2.7)%	$ 147.4	29.5 %
Non-operating income and (expense)							
Interest expense	$ (230.9)	$ (112.6)	$ (126.2)	$ (118.3)	105.1 %	$ 13.7	(10.9)%
Interest income	4.7	3.4	5.6	1.3	38.2 %	(2.2)	(39.3)%
Earnings from equity method investments	13.0	12.0	8.9	1.0	8.3 %	3.1	34.8 %
Other income and (expense), net	(30.0)	(49.2)	0.9	19.2	(39.0)%	(50.1)	nm
Total non-operating income and (expense)	$ (243.3)	$ (146.3)	$ (110.8)	$ (97.0)	66.3 %	$ (35.5)	32.0 %
Income from continuing operations before income taxes	$ 387.2	$ 501.4	$ 389.5	$ (114.2)	(22.8)%	$ 111.9	28.7 %
Provision for income taxes	(119.9)	(130.9)	(83.7)	11.0	(8.4)%	(47.2)	56.4 %
Income from continuing operations	$ 267.3	$ 370.5	$ 305.7	$ (103.2)	(27.9)%	$ 64.8	21.2 %
Discontinued operations, net of tax	17.4	1,031.7	49.8	(1,014.3)	(98.3)%	981.9	nm
Net income	$ 284.7	$ 1,402.2	$ 355.6	$(1,117.5)	(79.7)%	$1,046.6	nm
Less: net income attributable to noncontrolling interests	(15.2)	(15.0)	(12.4)	(0.2)	1.3 %	(2.6)	21.0 %
Net income attributable to TransUnion	$ 269.5	$ 1,387.1	$ 343.2	$(1,117.6)	(80.6)%	1,043.9	nm

nm: not meaningful

As a result of displaying amounts in millions, rounding differences may exist in the table above.

Revenue

For 2022, revenue increased $749.7 million compared with 2021, due primarily to a 24.4% increase from our recent acquisitions in the U.S. Markets and Consumer Interactive segments and organic growth from new business wins and product initiatives in certain markets, partially offset by macroeconomic weakness in several markets and a decrease of 2.3 % from the impact of foreign currencies.

For 2021, revenue increased $429.6 million compared with 2020, due primarily to improving macroeconomic conditions in all of our markets, revenue from new product initiatives, revenue from our recent acquisitions in the U.S. Markets and Consumer Interactive segments, and an increase of 1.1% from the impact of foreign currencies.

Operating Expenses

Cost of Services

For 2022, cost of services increased $231.3 million compared with 2021. The increase was due primarily to:

- operating and integration-related costs from our recent acquisitions in our U.S. Markets and Consumer Interactive segments;
- an increase in costs from our accelerated technology investment;

- an increase in organic product costs resulting from the increase in revenue in our U.S. Markets and International segments in the period; and
- an increase in labor costs, including an increase in stock-based compensation, primarily in our International segment, as we continue to invest in key strategic growth initiatives;

partially offset by,

- the impact of foreign currencies on our international operations.

For 2021, cost of services increased $137.7 million compared with 2020. The increase was due primarily to:

- an increase in product costs resulting from the increase in revenue, primarily in our U.S. Markets segment;
- operating and integration-related costs relating to the business acquisitions in our U.S. Markets and Consumer Interactive segments;
- an increase in labor costs, primarily in our International segment, as we continue to invest in key strategic growth initiatives;
- an increase in costs from our accelerated technology investment; and
- the impact of strengthening foreign currencies on the expenses of our International segment.

Selling, General and Administrative

For 2022, selling, general and administrative expenses increased $393.5 million compared with 2021. The increase was due primarily to:

- operating and integration-related costs from our recent acquisitions in our U.S. Markets and Consumer Interactive segments;
- an increase for certain legal and regulatory expenses;
- an increase in labor costs, as we continue to invest in key strategic growth initiatives; and
- an increase in travel and entertainment expenses due to increased travel following the easing of COVID-19 travel restrictions, primarily in our U.S. Markets and International segments,

partially offset by:

- a decrease in incentive compensation due to lower financial performance;
- a decrease in advertising expense, primarily in our Consumer Interactive segment; and
- the impact of foreign currencies on the expenses of our International segment.

For 2021, selling, general and administrative expenses increased $114.2 million compared with 2020. The increase was due primarily to:

- an increase in labor costs across all segments and Corporate, including an increase in incentive and stock-based compensation due to improved performance, as we continue to invest in key strategic growth initiatives;
- operating and integration-related costs from our recent acquisitions in our U.S. Markets and Consumer Interactive segments;
- an increase in costs from our accelerated technology investment; and
- the impact of strengthening foreign currencies on the expenses of our International segment,

partially offset by:

- a decrease in costs for certain legal and regulatory matters; and
- a decrease in bad debt expense, as we have reversed reserves that were recorded at the beginning of the COVID-19 pandemic.

Depreciation and amortization

For 2022, depreciation and amortization increased $142.0 million compared with 2021, due primarily to an increase in depreciation and amortization from our recent acquisitions of tangible and intangible assets.

For 2021, depreciation and amortization increased $30.3 million compared with 2020, due primarily to recent acquisitions of tangible and intangible assets.

Non-Operating Income and (Expense)

Interest expense

On December 30, 2022, we prepaid $200.0 million of our Senior Secured Term Loan B-6, funded from our cash-on-hand. On January 31, 2022, we prepaid $400 million of our Senior Secured Term Loan B-6, funded from our cash-on-hand. We also made prepayments of our Senior Secured Term Loans in 2021 and 2020 of $85.0 million in March 2021 and $150.0 million in December 2020 both funded by cash-on-hand.

On December 1, 2021, we borrowed $3,100.0 of additional debt under our Senior Secured Credit Facility to fund the acquisition of Neustar. In addition, on December 1, 2021, we entered into a Second Lien Credit Agreement to obtain term loans in an aggregate amount of $640.0 million (the "Second Lien Term Loan") which was used to fund the acquisition of Sontiq. On December 23, 2021, we fully repaid the Second Lien Term Loan using a portion of the proceeds from our sale of the Healthcare business.

The interest rate on our debt is variable and based on LIBOR. Approximately 70% of this debt is hedged with interest rate swaps.

These factors impact the comparability of interest expense between periods. Our future interest expense could be materially impacted by changes in our variable interest rates to the extent our variable rate debt is not hedged, additional borrowings, or additional prepayments. See Part II, Item 8, "Financial Statements and Supplementary Data - Notes to Consolidated Financial Statements," Note 12, "Debt," for additional information about our debt.

For the twelve months ended December 31, 2022, interest expense increased $118.3 million compared with 2021. For the twelve months ended December 31, 2021, interest expense decreased $13.7 million compared with 2020. The increase in interest expense for 2022 is due primarily to additional borrowings of $3,100.0 million under our Senior Secured Credit Facility to fund the acquisition of Neustar on December 1, 2021, and the impact of an increase in the average interest rate. The decrease in interest expense for 2021 was due primarily to the impact of a decrease in our average interest rate and a decrease in our average outstanding principal balance, partially offset by expenses attributable to new borrowings and early prepayments late in the year.

Other income and (expense), net

Other income and (expense), net includes acquisition fees, loan fees, and various other income and expenses.

				Change			
	Twelve months ended December 31,			2022 vs. 2021		2021 vs. 2020	
(in millions)	2022	2021	2020	$	%	$	%
Other income and (expense), net:							
Acquisition fees	$ (23.7)	$ (48.1)	$ (7.0)	$ 24.4	(50.7)%	$ (41.1)	nm
Loan fees	(11.0)	(19.6)	(2.0)	8.6	(43.9)%	(17.6)	nm
Other income (expense), net	4.7	18.5	9.9	(13.8)	74.7 %	8.7	(87.5)%
Total other income and (expense), net	$ (30.0)	$ (49.2)	$ 0.9	$ 19.2	(39.0)%	$ (50.1)	nm

nm: not meaningful

As a result of displaying amounts in millions, rounding differences may exist in the table above.

Acquisition fees

Acquisition fees represent costs we have incurred for various acquisition-related efforts, and include costs related to our acquisitions of Argus in 2022, Neustar and Sontiq in 2021; and Tru Optik and Signal Digital in 2020, as well as costs of our other acquisition efforts. See Part II, Item 8, "Financial Statements and Supplementary Data - Notes to Consolidated Financial Statements," Note 2, "Business Acquisitions," for additional information about our acquisition-related efforts.

Loan fees

For 2022, loan fees included $9.3 million of financing fees and other net costs expensed as a result of our repayment of our Second Lien Term Loan and the partial repayment of our other Term Loans. For 2021, loan fees included $17.9 million of financing fees and other net costs expensed as a result of our repayment of our Second Lien Term Loan and the partial repayment of our other Term Loans. For 2020, loan fees were not

significant. See Part II, Item 8, “Financial Statements and Supplementary Data - Notes to Consolidated Financial Statements,” Note 12, “Debt,” for additional information about our debt.

Other income (expense), net

Includes currency remeasurement gains and losses, dividends received from Cost Method investments, gains and losses on Cost Method investments, if any, and other miscellaneous non-operating income and expense items, including net recoveries from a fraud incident that occurred in July 2019 in our Asia Pacific region.

Provision for Income Taxes

For 2022, we reported a 31.0% effective tax rate, which is higher than the 21.0% U.S. federal corporate statutory rate due primarily to increases in valuation allowances on foreign tax credit carryforwards, nondeductible expenses in connection with certain legal and regulatory matters and executive compensation limitations, and other rate-impacting items, partially offset by benefits from the research and development credit and excess tax benefits on stock-based compensation.

For 2021, we reported a 26.1% effective tax rate, which is higher than the 21.0% U.S. federal corporate statutory rate due primarily to recording tax expense related to the remeasurement of our U.K. deferred taxes to reflect an increase in the U.K. corporate tax rate enacted in the second quarter 2021 and nondeductible transaction costs and penalties, partially offset by excess tax benefits on stock based compensation and a tax benefit related to electing the Global Intangible Low Tax Income (“GILTI”) high-tax exclusion retroactively for the 2018 and 2019 tax years. On July 20, 2020, the U.S. Treasury issued and enacted final regulations related to GILTI that allow certain U.S. taxpayers to elect to exclude foreign income that is subject to a high effective tax rate from their GILTI inclusions. The GILTI high-tax exclusion is an annual election and is retroactively available.

For 2020, we reported a 21.5% effective tax rate, which is higher than the 21.0% U.S. federal corporate statutory rate due primarily to an increase in state taxes, valuation allowances on foreign tax credit carryforwards, and uncertain tax positions including related interest and penalties, partially offset by excess tax benefits on stock based compensation and foreign taxes in jurisdictions which have tax rates lower than the U.S. federal corporate statutory rate.

Segment Results of Operations—Twelve Months Ended December 31, 2022, 2021 and 2020:

Management, including our chief operating decision maker ("CODM"), evaluates the financial performance of our businesses based on revenue and segment Adjusted EBITDA. For the twelve months ended December 31, 2022, 2021 and 2020, our segment revenue and adjusted EBITDA were as follows:

For the twelve months ended December 31, 2022, 2021 and 2020, these key performance indicators were as follows:

Revenue, Adjusted EBITDA and Adjusted EBITDA margin by Segment

				Change			
	Twelve months ended December 31,			2022 vs. 2021		2021 vs. 2020	
(dollars in millions)	2022	2021	2020	$	%	$	%
Revenue:							
U.S. Markets gross revenue							
Financial Services	$1,255.1	$1,090.0	$ 939.6	$ 165.1	15.1 %	$ 150.4	16.0 %
Emerging Verticals	1,192.1	701.0	571.1	491.1	70.1 %	129.9	22.7 %
U.S. Markets gross revenue	$2,447.3	$1,791.0	$1,510.7	$ 656.3	36.6 %	$ 280.3	18.6 %
International:							
Canada	$ 128.2	$ 126.9	$ 108.0	$ 1.2	1.0 %	$ 19.0	17.6 %
Latin America	112.9	103.2	86.5	9.7	9.4 %	16.7	19.3 %
UK	203.0	216.5	183.1	(13.5)	(6.2)%	33.4	18.2 %
Africa	61.7	59.5	49.0	2.2	3.7 %	10.5	21.4 %
India	174.2	133.1	100.0	41.1	30.9 %	33.1	33.1 %
Asia Pacific	75.9	62.7	56.2	13.2	21.1 %	6.5	11.6 %
International gross revenue	$ 755.9	$ 701.9	$ 582.7	$ 54.0	7.7 %	$ 119.2	20.5 %
Consumer Interactive gross revenue	$ 585.3	$ 545.8	$ 513.1	$ 39.5	7.2 %	$ 32.7	6.4 %
Total gross revenue	$3,788.4	$3,038.7	$2,606.5	$ 749.8	24.7 %	$ 432.2	16.6 %
Intersegment revenue eliminations	(78.6)	(78.4)	(75.9)	(0.1)	nm	(2.5)	nm
Total revenue as reported	$3,709.9	$2,960.2	$2,530.6	$ 749.6	25.3 %	$ 429.6	17.0 %
Adjusted EBITDA:							
U.S. Markets	$ 870.6	$ 715.6	$ 593.9	$ 155.0	21.7 %	$ 121.7	20.5 %
International	329.3	300.1	219.8	29.2	9.7 %	80.3	36.5 %
Consumer Interactive	282.3	263.1	247.6	19.2	7.3 %	15.5	6.3 %
Adjusted EBITDA margin:							
U.S. Markets	35.6 %	40.0 %	39.3 %		(4.4)%		0.7 %
International	43.6 %	42.8 %	37.7 %		0.8 %		5.1 %
Consumer Interactive	48.2 %	48.2 %	48.3 %		— %		(0.1)%

nm: not meaningful

As a result of displaying amounts in millions, rounding differences may exist in the table above.

We define Adjusted EBITDA Margin for our segments as the segment Adjusted EBITDA divided by segment gross revenue.

U.S. Markets Segment

Revenue

For 2022, U.S. Markets revenue increased $656.3 million, compared with the same period in 2021, due primarily to a 36.6% increase from our acquisitions of Neustar and Argus, partially offset by a decrease in organic revenue in our financial services vertical.

For 2021, U.S. Markets revenue increased $280.3 million, compared with the same period in 2020, due primarily to increases in revenue in both verticals including revenue from our acquisition of Neustar in December 2021.

Financial Services: For 2022, Financial Services revenue increased $165.1 million due primarily to a 16.7% increase from our acquisitions of Neustar and Argus, partially offset by a decrease in organic revenue. Organic revenue decreased in our mortgage line of business as volumes declined due to the significant increases in interest rates, which was partially offset by an increase in revenue from new product initiatives in our card and banking, consumer lending, and auto lines of business. We anticipate interest rates will remain high and continue to impact our Financial Services business.

For 2021, Financial Services revenue increased $150.4 million due primarily to improvements in macroeconomic conditions and new product initiatives in our consumer lending, card and banking, and auto lines of business and revenue from our acquisition of Neustar, partially offset by a decrease in revenue in our mortgage line of business as volumes have declined due to rising interest rates.

Emerging Verticals: For 2022, Emerging Verticals revenue increased $491.1 million, due primarily to a 64.7% increase from our acquisition of Neustar and an increase in organic revenue. Organic revenue increased in all of our verticals due primarily to new wins in our existing product portfolio.

For 2021, Emerging Verticals revenue increased $129.9 million due primarily to improving macroeconomic conditions in most of our verticals, revenue from new product initiatives, and an increase from our acquisition of Neustar. Every vertical had an increase in revenue during the year, except Services and Collections, which was down slightly. Our recent acquisitions accounted for an increase in revenue of 12.0%.

Adjusted EBITDA Margin

For 2022, Adjusted EBITDA margins for the U.S. Markets segment decreased due primarily to the impact of the lower margin profile of the Neustar business, integration costs from our acquisition of Argus, and an increase in product costs resulting from the increase in revenue, and a decrease in organic revenue in our financial services vertical, partially offset by an increase in organic revenue in our Emerging Verticals

For 2021, Adjusted EBITDA margins for the U.S. Markets segment increased due primarily to an increase in revenue and improving market conditions in both of our verticals and a decrease in bad debt expense, partially offset by an increase in product costs resulting from the increase in revenue and an increase in incentive compensation due to improved performance.

International Segment

Revenue

For 2022, International revenue increased $54.0 million, or 7.7%, compared with 2021, due primarily to higher local currency revenue in all regions from increased volumes, which resulted from improving economic conditions and from new product initiatives, and a decrease of 7.3% from the impact of foreign currencies.

For 2021, International revenue increased $119.2 million, or 20.5%, compared with 2020, due primarily to higher local currency revenue from increased volumes resulting from improving economic conditions and from new product initiatives, and an increase of 4.5% from the impact of foreign currencies.

Canada: For 2022, Canada revenue increased $1.2 million, or 1.0%, compared with 2021. The increase was due primarily to higher local currency revenue from new business wins and incremental revenue with current customers, partially offset by a decrease in revenue of 3.8% from the impact of foreign currencies, and revenue earned from a significant breach contract in the prior year.

For 2021, Canada revenue increased $19.0 million, or 17.6%, compared with 2020. The increase was due primarily to higher local currency revenue from increased volumes resulting from improving economic conditions and from new product initiatives and an increase of 7.7% from the impact of foreign currencies.

Latin America: For 2022, Latin America revenue increased $9.7 million, or 9.4%, compared with 2021. The increase was due primarily to higher local currency revenue from growth across our markets reflecting good local macroeconomic conditions and consumer fundamentals and ongoing new business wins and expansion of our new solutions, partially offset by a decrease of 4.5% from the impact of foreign currencies.

For 2021, Latin America revenue increased $16.7 million, or 19.3%, compared with 2020. The increase was due primarily to higher local currency revenue from increased volumes resulting from improving economic conditions and from new product initiatives, partially offset by a decrease of 1.4% from the impact of foreign currencies.

United Kingdom: For 2022, United Kingdom revenue decreased $13.5 million, or 6.3%, compared with 2021. The decrease is primarily driven by a 10.3% impact from foreign currencies. Excluding the impact of foreign currency, local currency revenue increased due to an expansion of key product offerings despite the impact of a one-time contract in the prior year.

For 2021, United Kingdom revenue increased $33.4 million, or 18.2%, compared with 2020. The increase was due primarily to higher local currency revenue from increased volumes resulting from improving economic conditions and from new product initiatives and an increase of 7.9% from the impact of foreign currencies.

Africa: For 2022, Africa revenue increased $2.2 million, or 3.8%. The increase was due primarily to higher local currency revenue from meaningful new business wins and contract renewals as well as growth in emerging countries, partially offset by a decrease of 10.1% from the impact of foreign currencies.

For 2021, Africa revenue increased $10.5 million, or 21.4%. The increase was due primarily to higher local currency revenue from increased volumes resulting from improving economic conditions and from new product initiatives, and an increase of 10.3% from the impact of foreign currencies.

India: For 2022, India revenue increased $41.1 million, or 30.9%, due primarily to higher local currency revenue from growth in consumer lending and card issuance fueled by consumers who continue to spend despite rising inflation, partially offset by a decrease of 8.4% from the impact of foreign currencies.

For 2021, India revenue increased $33.1 million, or 33.1%, due primarily to higher local currency revenue from increased volumes resulting from improving economic conditions and from new product initiatives, and an increase of 0.1% from the impact of foreign currencies.

Asia Pacific: For 2022, Asia Pacific revenue increased $13.2 million, or 21.1%, due primarily to higher local currency revenue from increased volumes resulting from improved macroeconomic conditions, and new business wins, particularly in the Philippines and Hong Kong, partially offset by a decrease of 3.1% from the impact of foreign currencies.

For 2021, Asia Pacific revenue increased $6.5 million, or 11.6%, due primarily to higher local currency revenue from increased volumes resulting from improving economic conditions and from new product initiatives, partially offset by a decrease of 0.2% from the impact of foreign currencies.

Adjusted EBITDA Margin

For 2022, Adjusted EBITDA margins for the International segment increased due primarily to increase in local currency revenue and improving market conditions in most of our regions, partially offset by an increase in labor costs.

For 2021, Adjusted EBITDA margins for the International segment increased due primarily to an increase in revenue and improving market conditions in all of our regions and a decrease in bad debt expense, partially offset by an increase in product costs resulting from the increase in revenue and an increase in incentive compensation due to improved performance.

Consumer Interactive Segment

Revenue

For 2022, Consumer Interactive revenue increased $39.5 million, or 7.2%, compared with 2021, due primarily to an increase of 15.8% from our recent acquisition of Sontiq, partially offset by a decrease in revenue in both of our channels. In our indirect channel, revenue decreased due primarily to a large breach services contract which was recognized in the second half of 2021. In our Direct channel, slowing macroeconomic conditions have significantly reduced consumer demand for our paid credit products.

For 2021, Consumer Interactive revenue increased $32.7 million, or 6.4%, compared with 2020, due primarily to an increase in revenue from both our direct and indirect channels including revenue from our acquisition of Sontiq. In

our indirect channel, revenue increased due primarily to a large breach services contract which was recognized in the second half of 2021.

Adjusted EBITDA Margin

For 2022 and 2021, Adjusted EBITDA margins for the Consumer Interactive were relatively consistent compared to 2021 and 2020, respectively.

Non-GAAP measures—Twelve Months Ended December 31, 2022, 2021 and 2020:

In addition to the GAAP measures discussed above, Management, including our CODM, evaluates the financial performance of our businesses based on the non-GAAP measures Consolidated Adjusted EBITDA, Consolidated Adjusted EBITDA Margin, Adjusted Net Income, Adjusted Diluted Earnings per Share, Adjusted Effective Tax Rate and Leverage Ratio.

Non-GAAP Financial Measures

We present Consolidated Adjusted EBITDA, Consolidated Adjusted EBITDA Margin, Adjusted Net Income, Adjusted Diluted Earnings per Share, Adjusted Provision for Income Taxes, Adjusted Effective Tax Rate and Leverage Ratio for all periods presented. These are important financial measures for the Company but are not financial measures as defined by GAAP. These financial measures should be reviewed in conjunction with the relevant GAAP financial measures and are not presented as alternative measures of GAAP. Other companies in our industry may define or calculate these measures differently than we do, limiting their usefulness as comparative measures. Because of these limitations, these non-GAAP financial measures should not be considered in isolation or as substitutes for performance measures calculated in accordance with GAAP, including operating income, operating margin, effective tax rate, net income (loss) attributable to the Company, diluted earnings per share or cash provided by operating activities. Reconciliations of these non-GAAP financial measures to their most directly comparable GAAP financial measures are presented in the tables below.

We present Consolidated Adjusted EBITDA, Consolidated Adjusted EBITDA Margin, Adjusted Net Income, Adjusted Diluted Earnings per Share, Adjusted Provision for Income Taxes and Adjusted Effective Tax Rate as supplemental measures of our operating performance because these measures eliminate the impact of certain items that we do not consider indicative of our cash operations and ongoing operating performance. These are measures frequently used by securities analysts, investors and other interested parties in their evaluation of the operating performance of companies similar to ours.

Our board of directors and executive management team use Adjusted EBITDA as an incentive compensation measure for most eligible employees and Adjusted Diluted Earnings per Share as an incentive compensation measure for certain of our senior executives.

Under the credit agreement governing our Senior Secured Credit Facility, our ability to engage in activities such as incurring additional indebtedness, making investments and paying dividends is tied to our Leverage Ratio which is partially based on Adjusted EBITDA. Investors also use our Leverage Ratio to assess our ability to service our debt and make other capital allocation decisions.

We define Consolidated Adjusted EBITDA as net income (loss) attributable to TransUnion, less discontinued operations, net of tax, plus net interest expense, plus (less) provision (benefit) for income taxes, plus depreciation and amortization, plus stock-based compensation, plus mergers, acquisitions, divestitures and business optimization-related expenses, including Neustar integration-related expenses, plus certain accelerated technology investment expenses to migrate to the cloud, plus (less) certain other expenses (income). We define Consolidated Adjusted EBITDA Margin as Consolidated Adjusted EBITDA divided by total revenue as reported.

We define Adjusted Net Income as net income (loss) attributable to TransUnion, less discontinued operations, net of tax, plus stock-based compensation, plus mergers, acquisitions, divestitures and business optimization-related expenses, including Neustar integration-related expenses, plus certain accelerated technology investment expenses, plus (less) certain other expenses (income), plus amortization of certain intangible assets, plus or minus the total adjustment for income taxes included in our Adjusted Provision for Income Taxes. We define Adjusted Diluted Earnings per Share as Adjusted Net Income divided by the weighted-average diluted shares outstanding. We define Adjusted Provision for Income Taxes as our provision for income taxes, plus or minus the tax impact on the adjustment included in Adjusted Net Income, plus or minus the impact of excess tax benefits for share compensation, plus or minus other items that relate to prior periods such as valuation allowance changes, deferred tax rate and return to provision adjustments, and other unusual items that are included in our provision for income taxes. We define Adjusted Effective Tax Rate as Adjusted Provision for Income Taxes divided by Adjusted Net Income.

We define Leverage Ratio as net debt divided by Consolidated Adjusted EBITDA for the most recent twelve-month period including twelve months of Adjusted EBITDA from significant acquisitions. Net debt is defined as total debt less cash and cash equivalents as reported on the balance sheet as of the end of the period.

For the twelve months ended December 31, 2022, 2021 and 2020, these non-GAAP measures were as follows:

Adjusted EBITDA and Adjusted EBITDA Margin:

(dollars in millions)	Twelve Months Ended December 31, 2022	2021	2020	Change 2022 vs. 2021 $	%	2021 vs. 2020 $	%
Reconciliation of net income attributable to TransUnion to consolidated Adjusted EBITDA:							
Net income attributable to TransUnion	$ 269.5	$1,387.1	$ 343.2	$(1,117.7)	nm	$ 1,043.9	nm
Discontinued operations	(17.4)	(1,031.7)	(49.8)	1,014.3	nm	(981.8)	nm
Net income from continuing operations attributable to TransUnion	$ 252.1	$ 355.5	$ 293.4	$ (103.3)	(29.1)%	$ 62.1	21.2 %
Net interest expense	226.2	109.2	120.6	117.1	nm	(11.5)	(9.5)%
Provision (benefit) for income taxes	119.9	130.9	83.7	(11.0)	(8.4)%	47.1	56.3 %
Depreciation and amortization	519.0	377.0	346.8	142.0	37.7 %	30.3	8.7 %
EBITDA	$1,117.3	$ 972.5	$ 844.5	$ 144.7	14.9 %	$ 128.0	15.2 %
Adjustments to EBITDA:							
Stock-based compensation[1]	81.1	70.1	45.9	11.0	15.6 %	24.3	52.8 %
Mergers and acquisitions, divestitures and business optimization[2]	50.7	52.6	8.5	(1.8)	(3.4)%	44.1	nm
Accelerated technology investment [3]	51.4	42.3	19.3	9.1	21.5 %	23.0	nm
Net other[4]	46.1	19.4	35.5	26.7	nm	(16.1)	(45.4)%
Total adjustments to EBITDA	$ 229.3	$ 184.4	$ 109.1	$ 44.9	24.4 %	$ 75.2	68.9 %
Consolidated Adjusted EBITDA	$1,346.5	$1,156.9	$ 953.6	$ 189.7	16.4 %	$ 203.2	21.3 %
Net income attributable to TransUnion margin	7.3 %	46.9 %	13.6 %		(39.6)%		33.3 %
Consolidated Adjusted EBITDA margin[5]	36.3 %	39.1 %	37.7 %		(2.8)%		1.4 %

nm: not meaningful

As a result of displaying amounts in millions, rounding differences may exist in the table above.

1. Consisted of stock-based compensation and cash-settled stock-based compensation.

2. For the twelve months ended December 31, 2022, consisted of the following adjustments: $33.1 million of Neustar integration costs; $23.7 million of acquisition expenses; $4.6 million loss on the impairment of a Cost Method investment; $(6.8) million of reimbursements for transition services related to divested businesses, net of separation expenses; a $(3.4) million gain related to a government tax reimbursement from a recent business acquisition; and a $(0.6) million adjustment to the fair value of a put option liability related to a minority investment.

   For the twelve months ended December 31, 2021, consisted of the following adjustments: $48.1 million of acquisition expenses; $9.1 million of Neustar integration costs; $8.4 million of adjustments to contingent consideration expense from previous acquisitions; a $1.1 million gain reduction to notes receivable that were converted into equity upon acquisition and consolidation of an entity; a $(12.5) million gain on a Cost Method investment resulting from an observable price change for a similar investment of the same issuer; a ($1.1) million reimbursement for transition services related to divested businesses, net of separation expenses; and a ($0.5) million gain on the sale of a Cost Method investment.

   For the twelve months ended December 31, 2020, consisted of the following adjustments: $7.5 million of Callcredit integration costs; $7.0 million of acquisition expenses; a $4.8 million loss on the impairment of a Cost Method investment; $1.7 million of adjustments to contingent consideration expense from previous acquisitions; an ($8.1) million remeasurement gain on notes receivable that were converted into equity upon acquisition and consolidation of an entity; a ($2.5) million gain on a Cost Method investment resulting from an observable price change for a similar investment of the same issuer; a ($1.8) million gain on the disposal

of assets of a small business in our United Kingdom region; and a ($0.1) million reimbursement for transition services provided to the buyers of certain of our discontinued operations.

3. Represents expenses associated with our accelerated technology investment to migrate to the cloud.

4. For the twelve months ended December 31, 2022, consisted of the following adjustments: $28.4 million for certain legal and regulatory expenses; $9.3 million of deferred loan fees written off as a result of the prepayments on our debt; a $6.3 million net loss from currency remeasurement of our foreign operations; $1.9 million of loan fees and of other.

   For the twelve months ended December 31, 2021, consisted of the following adjustments: $17.9 million of deferred loan fees written off as a result of the prepayments on our debt; $1.2 million for certain legal and regulatory expenses; a ($3.5) million net recovery from a fraud incident that occurred in July 2019 in our Asia Pacific region; and a $3.7 million net loss from currency remeasurement of our foreign operations, loan fees and other.

   For the twelve months ended December 31, 2020, consisted of the following adjustments: $34.7 million for certain legal and regulatory expenses; $0.9 million of deferred loan fees written off as a result of the prepayments on our debt; a $(1.5) million net recovery from a fraud incident that occurred in July 2019 in our Asia Pacific region; and $1.4 million net loss from currency remeasurement of our foreign operations, loan fees and other.

5. Consolidated Adjusted EBITDA margin is calculated by dividing Consolidated Adjusted EBITDA by total revenue.

Consolidated Adjusted EBITDA

For 2022, consolidated Adjusted EBITDA increased $189.7 million due primarily to:

- an increase in Adjusted EBITDA from our recent acquisitions in our U.S. Markets and Consumer Interactive segments;
- organic Adjusted EBITDA growth;
- a decrease in incentive compensation due to lower financial performance; and
- a decrease in advertising expense, primarily in our Consumer Interactive segment,

partially offset by:

- an increase in labor costs as we continue to invest in key strategic growth initiatives;
- an increase for certain legal and regulatory expenses; and
- an increase in travel and entertainment expenses due to increased travel following the easing of COVID-19 travel restrictions, primarily in our U.S. Markets and International segments.

Adjusted EBITDA margin decreased in 2022 due primarily to lower margins from our recent acquisitions.

For 2021, consolidated Adjusted EBITDA increased $203.2 million due primarily to:

- an increase in Adjusted EBITDA from improving macroeconomic conditions in all of our markets;
- a decrease in costs for certain legal and regulatory matters; and
- a decrease in bad debt expense, as we have reversed reserves that were recorded at the beginning of the COVID-19 pandemic,

partially offset by:

- an increase in labor costs across all segments and Corporate, including an increase in incentive compensation due to improved performance; and
- operating and integration-related costs from our recent acquisitions in our U.S. Markets and Consumer Interactive segments.

Adjusted EBITDA margin increased in 2021 due primarily to increase in revenue and improving market conditions.

Adjusted Net Income, Adjusted EPS

(dollars in millions)	Twelve Months Ended December 31, 2022	2021	2020	Change 2022 vs. 2021 $	%	2021 vs. 2020 $	%
Reconciliation of net income attributable to TransUnion to Adjusted Net Income:							
Net income attributable to TransUnion	$ 269.5	$ 1,387.1	$ 343.2	$(1,117.6)	nm	$ 1,043.9	nm
Discontinued operations, net of tax	(17.4)	(1,031.7)	(49.8)	1,014.3	nm	(981.9)	nm
Income from continuing operations attributable to TransUnion	$ 252.1	$ 355.5	$ 293.4	$ (103.4)	(29.1)%	$ 62.1	21.2 %
Adjustments before income tax items:							
Stock-based compensation[1]	81.1	70.1	45.9	11.0	15.7 %	24.2	52.7 %
Mergers and acquisitions, divestitures and business optimization[2]	50.7	52.6	8.5	(1.9)	(3.6)%	44.10	nm
Accelerated technology investment[3]	51.4	42.3	19.3	9.1	21.5 %	23.0	nm
Net other[4]	44.3	17.7	34.1	26.6	nm	(16.4)	(48.1)%
Amortization of certain intangible assets[5]	306.7	189.3	181.2	117.4	62.0 %	8.1	4.5 %
Total adjustments before income tax items	$ 534.2	$ 372.0	$ 288.9	$ 162.2	43.6 %	$ 83.1	28.8 %
Change in provision for income taxes	$ (86.2)	$ (62.9)	$ (68.2)	$ (23.3)	37.0 %	$ 5.3	(7.8)%
Adjusted Net Income	$ 700.1	$ 664.5	$ 514.1	$ 35.6	5.4 %	$ 150.4	29.3 %
Weighted-average shares outstanding:							
Basic	192.5	191.4	189.9	nm	nm	nm	nm
Diluted	193.1	193.0	192.2	nm	nm	nm	nm
Adjusted Earnings per Share:							
Basic	$ 3.64	$ 3.47	$ 2.71	$ 0.17	4.9 %	$ 0.76	28.0 %
Diluted	$ 3.62	$ 3.44	$ 2.67	$ 0.18	5.2 %	$ 0.77	28.8 %

	Twelve Months Ended December 31,		
	2022	2021	2020
Reconciliation of diluted earnings per share from net income attributable to TransUnion to Adjusted Diluted Earnings per Share:			
Diluted earnings per common share from:			
Net income attributable to TransUnion	$ 1.40	$ 7.19	$ 1.79
Discontinued operations, net of tax	(0.09)	(5.35)	(0.26)
Income from continuing operations attributable to TransUnion	$ 1.31	$ 1.84	$ 1.53
Adjustments before income tax items:			
Stock-based compensation[1]	0.42	0.36	0.24
Mergers and acquisitions, divestitures and business optimization[2]	0.26	0.27	0.04
Accelerated technology investment[3]	0.27	0.22	0.10
Net other[4]	0.23	0.09	0.18
Amortization of certain intangible assets[5]	1.59	0.98	0.94
Total adjustments before income tax items	$ 2.77	$ 1.93	$ 1.50
Change in provision for income taxes	$ (0.45)	$ (0.33)	$ (0.35)
Adjusted Diluted Earnings per Share	$ 3.62	$ 3.44	$ 2.67

As a result of displaying amounts in millions, rounding differences may exist in the table above and footnotes below.

1. Consisted of stock-based compensation, including amounts which are cash settled.
2. Mergers and acquisitions, divestitures and business optimization consisted of the following adjustments:

   For the twelve months ended December 31, 2022, $33.1 million of Neustar integration costs; $23.7 million of acquisition expenses; $4.6 million loss on the impairment of a Cost Method investment; $(6.8) million of reimbursements for transition services related to divested businesses, net of separation expenses; a $(3.4) million gain related to a government tax reimbursement from a recent business acquisition; and a $(0.6) million adjustment to the fair value of a put option liability related to a minority investment.

   For the twelve months ended December 31, 2021, $48.1 million of acquisition expenses; $9.1 million of Neustar integration costs; $8.4 million of adjustments to contingent consideration expense from previous acquisitions; a $1.1 million gain reduction to notes receivable that were converted into equity upon acquisition and consolidation of an entity; a ($12.5) million gain on a Cost Method investment resulting from an observable price change for a similar investment of the same issuer; a $(1.1) million reimbursement for transition services related to divested businesses, net of separation expenses; and a ($0.5) million gain on the sale of a Cost Method investment.

   For the twelve months ended December 31, 2020, consisted of the following adjustments: $7.5 million of Callcredit integration costs; $7.0 million of acquisition expenses; a $4.8 million loss on the impairment of a Cost Method investment; $1.7 million of adjustments to contingent consideration expense from previous acquisitions; an ($8.1) million remeasurement gain on notes receivable that were converted into equity upon acquisition and consolidation of an entity; a ($2.5) million gain on a Cost Method investment resulting from an observable price change for a similar investment of the same issuer; a ($1.8) million gain on the disposal of assets of a small business in our United Kingdom region; and a ($0.1) million reimbursement for transition services provided to the buyers of certain of our discontinued operations.
3. Represents expenses associated with our accelerated technology investment to migrate to the cloud.
4. Net other consisted of the following adjustments:

   For the twelve months ended December 31, 2022, a $28.4 million net increase in certain legal and regulatory expenses; $9.3 million of deferred loan fees written off as a result of the prepayments on our debt; and a $6.6 million net loss from currency remeasurement of our foreign operations and other.

   For the twelve months ended December 31, 2021, $17.9 million of deferred loan fees written off as a result of the prepayments on our debt; $1.2 million for certain legal and regulatory expenses; a ($3.5) million net recovery from a fraud incident that occurred in July 2019 in our Asia Pacific region; and $2.0 million of net other consisting of net losses from currency remeasurement of our foreign operations and other.

For the twelve months ended December 31, 2020, consisted of the following adjustments: $34.7 million for certain legal expenses; $0.9 million of deferred loan fees written off as a result of the prepayments on our debt; a $(1.5) million net recovery from a fraud incident that occurred in July 2019 in our Asia Pacific region; and $1.4 million net loss from currency remeasurement of our foreign operations, loan fees and other.

5. Consisted of amortization of intangible assets from our 2012 change in control transaction and amortization of intangible assets established in business acquisitions after our 2012 change in control transaction.

Adjusted Net Income

For 2022, the increase in Adjusted Net Income was due primarily to earnings from our recent acquisitions and organic growth, partially offset by an increase in interest expense.

For 2021, the increase in Adjusted Net Income was due to organic growth as result of improving macroeconomic conditions.

Adjusted Provision for Income Taxes and Effective Tax Rate

	Twelve Months Ended December 31,		
	2022	2021	2020
Income from continuing operations before income taxes	$ 387.2	$ 501.4	$ 389.5
Total adjustments before income tax items from Adjusted Net Income table above	534.2	372.0	288.9
Noncontrolling interest portion of Adjusted Net Income adjustments	—	(2.0)	(0.7)
Adjusted income from continuing operations before income taxes	$ 921.4	$ 871.4	$ 677.7
Reconciliation of provision for income taxes to Adjusted Provision for Income Taxes			
Provision for income taxes	$ (119.9)	$ (130.9)	$ (83.7)
Adjustments for income taxes:			
Tax effect of above adjustments [1]	(116.8)	(69.4)	(67.1)
Eliminate impact of excess tax benefits for stock-based compensation	(5.0)	(10.8)	(25.3)
Other [2]	35.6	17.3	24.2
Total adjustments for income taxes	$ (86.2)	$ (62.9)	$ (68.2)
Adjusted Provision for Income Taxes	$ (206.1)	$ (193.8)	$ (151.9)
Effective tax rate	31.0 %	26.1 %	21.5 %
Adjusted Effective Tax Rate	22.4 %	22.2 %	22.4 %

As a result of displaying amounts in millions, rounding differences may exist in the table above.

1. Tax rates used to calculate the tax expense impact are based on the nature of each item.
2. For the twelve months ended December 31, 2022, $25.7 million of valuation allowances related to prior periods; $6.7 million of deferred tax rate adjustments; $(0.3) million of return to provision and audit adjustments related to prior periods; $3.6 million of other adjustments.

   For the twelve months ended December 31, 2021, $29.3 million of deferred tax rate adjustments; $(5.4) million of return to provision and audit adjustments related to prior periods; $(4.5) million of valuation allowances; and $(2.1) million of other adjustments.

   For the twelve months ended December 31, 2020, $13.0 million of valuation allowances related to prior periods; $6.7 million of uncertain tax positions related to prior periods, $1.7 million of return to provision and audit adjustments related to prior periods; $1.3 million of deferred tax rate adjustments; and $1.5 million of other adjustments.

Adjusted Provision for Income Taxes

We reported an adjusted tax rate of 22.4%, 22.2%, and 22.4%, for 2022, 2021, and 2020, respectively, each of which is higher than the 21.0% U.S. federal corporate statutory rate due primarily to increases for state taxes and foreign withholding taxes, partially offset by benefits from the research and development credit and foreign taxes in jurisdictions which have tax rates lower than the U.S. federal corporate statutory rate.

Leverage Ratio

	Twelve Months Ended December 31,		
	2022	2021	2020
Reconciliation of net income (loss) attributable to TransUnion to Adjusted EBITDA:			
Net income (loss) attributable to TransUnion	$ 269.5	$ 1,387.1	$ 343.2
Discontinued operations, net of tax	(17.4)	(1,031.7)	(49.8)
Income (loss) from continuing operations attributable to TransUnion	$ 252.1	$ 355.5	$ 293.4
Net interest expense	226.2	109.2	120.6
Provision (benefit) for income taxes	119.9	130.9	83.7
Depreciation and amortization	519.0	377.0	346.8
EBITDA	$ 1,117.3	$ 972.5	$ 844.5
Adjustments to EBITDA:			
Stock-based compensation[1]	$ 81.1	$ 70.1	$ 45.9
Mergers and acquisitions, divestitures and business optimization[2]	50.7	52.6	8.5
Accelerated technology investment[3]	51.4	42.3	19.3
Net other[4]	46.1	19.4	35.5
Total adjustments to EBITDA	$ 229.3	$ 184.4	$ 109.1
Consolidated Adjusted EBITDA	1,346.5	1,156.9	953.6
Adjusted EBITDA for Pre-Acquisition Period[5]	6.4	145.4	—
Leverage Ratio Adjusted EBITDA	$ 1,352.9	$ 1,302.3	$ 953.6
Total debt	$ 5,670.1	$ 6,365.9	$ 3,454.2
Less: Cash and cash equivalents	585.3	1,842.4	492.7
Net Debt	$ 5,084.8	$ 4,523.5	$ 2,961.5
Ratio of Net Debt to Net income (loss) attributable to TransUnion	18.9	3.3	8.6
Leverage Ratio[6]	3.8	3.5	3.1

As a result of displaying amounts in millions, rounding differences may exist in the table above.

1. Consisted of stock-based compensation and cash-settled stock-based compensation.

2. For the twelve months ended December 31, 2022, consisted of the following adjustments: $33.1 million of Neustar integration costs; $23.7 million of acquisition expenses; $4.6 million loss on the impairment of a Cost Method investment; $(6.8) million of reimbursements for transition services related to divested businesses, net of separation expenses; a $(3.4) million gain related to a government tax reimbursement from a recent business acquisition; and a $(0.6) million adjustment to the fair value of a put option liability related to a minority investment.

   For the twelve months ended December 31, 2021, consisted of the following adjustments: $48.1 million of acquisition expenses; $9.1 million of Neustar integration costs; $8.4 million of adjustments to contingent consideration expense from previous acquisitions; a $1.1 million gain reduction to notes receivable that were converted into equity upon acquisition and consolidation of an entity; a $(12.5) million gain on a Cost Method investment resulting from an observable price change for a similar investment of the same issuer; a ($1.1) million reimbursement for transition services related to divested businesses, net of separation expenses; and a ($0.5) million gain on the sale of a Cost Method investment.

   For the twelve months ended December 31, 2020, consisted of the following adjustments: $7.5 million of Callcredit integration costs; $7.0 million of acquisition expenses; a $4.8 million loss on the impairment of a Cost Method investment; $1.7 million of adjustments to contingent consideration expense from previous acquisitions; an ($8.1) million remeasurement gain on notes receivable that were converted into equity upon acquisition and consolidation of an entity; a ($2.5) million gain on a Cost Method investment resulting from an observable price change for a similar investment of the same issuer; a ($1.8) million gain on the disposal

of assets of a small business in our United Kingdom region; and a ($0.1) million reimbursement for transition services provided to the buyers of certain of our discontinued operations.

3. Represents expenses associated with our accelerated technology investment to migrate to the cloud.

4. For the twelve months ended December 31, 2022, consisted of the following adjustments: $28.4 million for certain legal and regulatory expenses; $9.3 million of deferred loan fees written off as a result of the prepayments on our debt; a $6.3 million net loss from currency remeasurement of our foreign operations; $1.9 million of loan fees and of other.

   For the twelve months ended December 31, 2021, consisted of the following adjustments: $17.9 million of deferred loan fees written off as a result of the prepayments on our debt; $1.2 million for certain legal and regulatory expenses; a ($3.5) million net recovery from a fraud incident that occurred in July 2019 in our Asia Pacific region; and a $3.7 million net loss from currency remeasurement of our foreign operations, loan fees and other.

   For the twelve months ended December 31, 2020, consisted of the following adjustments: $34.7 million for certain legal and regulatory expenses; $0.9 million of deferred loan fees written off as a result of the prepayments on our debt; a $(1.5) million net recovery from a fraud incident that occurred in July 2019 in our Asia Pacific region; and $1.4 million net loss from currency remeasurement of our foreign operations, loan fees and other.

5. For years in which we made significant acquisitions, we have included a twelve-month period of adjusted EBITDA including Adjusted EBITDA for the period prior to our acquisition. The twelve months ended December 31, 2021 includes the eleven months of Adjusted EBITDA related to Neustar and Sontiq prior to our acquisitions in December 2021. The twelve months ended December 31, 2022 includes the three months of Adjusted EBITDA related to Argus prior to our acquisition in April 2022.

6. We define Leverage Ratio as net debt divided by Leverage Ratio Adjusted EBITDA as shown in the table above.

Our Leverage Ratio increased in 2022 compared with 2021 due primarily to the decrease in cash as a result of our acquisition of VF and the payment of taxes due on the gain on the divestiture of our Healthcare business, partially offset by proceeds received from the sale of the non-core VF businesses. Our Leverage Ratio increased in 2021 compared with 2020 due primarily to an increase in our net debt resulting from our acquisitions of Neustar and Sontiq.

Liquidity and Capital Resources

Overview

Our principal sources of liquidity are cash flows provided by operating activities, cash and cash equivalents on hand, and our senior secured revolving line of credit. Our principal uses of liquidity are working capital, capital expenditures, debt service and other capital structure obligations, business acquisitions, dividends, and other general corporate purposes. We believe our cash on hand, cash generated from operations, and funds available under the senior secured revolving line of credit will be sufficient to fund our planned capital expenditures, debt service and other capital structure obligations, business acquisitions, dividends, and operating needs for the foreseeable future. Our ability to maintain adequate liquidity for our operations in the future is dependent upon a number of factors, including our revenue, macroeconomic conditions, our ability to contain costs, including capital expenditures, and to collect accounts receivable, and various other factors, many of which are beyond our control. We will continue to monitor our liquidity position and may elect to raise funds through debt or equity financing in the future to fund significant investments or acquisitions that are consistent with our growth strategy.

Cash and cash equivalents totaled $585.3 million and $1,842.4 million at December 31, 2022 and 2021, respectively, of which $303.4 million and $205.0 million was held outside the United States in each respective period. As of December 31, 2022, we had no outstanding balance under the Senior Secured Revolving Credit Facility and $0.1 million of outstanding letters of credit, and could have borrowed up to the remaining $299.9 million available.

We also have the ability to request incremental loans on the same terms under the existing senior secured credit facility up to the greater of an additional $1,000.0 million and 100% of Consolidated EBITDA. In addition, so long as the senior secured net leverage ratio does not exceed 4.25-to-1, we may incur additional incremental loans, subject to certain additional conditions and commitments by existing or new lenders to fund any additional borrowings.

With certain exceptions, the Senior Secured Credit Facility obligations are secured by a first-priority security interest in substantially all of the assets of Trans Union LLC, including its investments in subsidiaries. The Senior Secured Credit Facility contains various restrictions and nonfinancial covenants, along with a senior secured net leverage ratio test. The nonfinancial covenants include restrictions on dividends, investments, dispositions, future borrowings and other specified payments, as well as additional reporting and disclosure requirements. The senior secured net leverage test must be met as a condition to incur additional indebtedness, make certain investments, and may be required to make certain restricted payments. The senior secured net leverage ratio must not exceed 5.5-to-1 at any such measurement date.

On April 8, 2022, we completed our acquisition of VF and paid $505.7 million, net of adjustments, which was funded with cash-on-hand. On December 30, 2022, we completed the previously announced sale of the non-core businesses of VF. Upon the sale, we received total proceeds of $173.9 million, consisting of $103.6 million in cash, and a note receivable with a face value of $72.0 million and a fair value of $70.3 million. For additional information on this transaction, see Part II, Item 8, “Notes to Consolidated Financial Statements,” Note 2, “Business Acquisitions” and Note 3, “Discontinued Operations.”

In April 2022, we paid $355 million of taxes due on the gain on the divestiture of our Healthcare business funded with cash-on-hand.

Each year, the Company may be required to make additional principal payments on the Senior Secured Term Loan B based on excess cash flows of the prior year, as defined in the agreement. There were no excess cash flows for 2022 and therefore no additional payment will be required in 2023. See Part II, Item 8, “Financial Statements and Supplementary Data - Notes to Consolidated Financial Statements,” Note 12, “Debt,” for additional information about our debt.

In the year ended December 31, 2022, we prepaid $600.0 million towards our Senior Secured Term Loans, funded from our cash on hand.

The dividend rate was $0.105 per share in the third and fourth quarters of 2022, $0.095 per share per quarter from the second quarter 2021 to the second quarter 2022 and $0.075 per share per quarter in the first quarter 2021. During 2022, we paid total dividends of $77.8 million. Dividends declared accrue to outstanding restricted stock units and are paid to employees as dividend equivalents when the restricted stock units vest. While we currently expect to continue to pay quarterly dividends, any determination to pay dividends in the future will be at the discretion of our board of directors and will depend on a number of factors, including our liquidity, results of operations, financial condition, contractual restrictions, restrictions imposed by applicable law and other factors that our board of directors deems appropriate. We currently have capacity and intend to continue to pay a quarterly dividend, subject to approval by our board.

On February 13, 2017, our board of directors authorized the repurchase of up to $300.0 million of our common stock over the next 3 years. Our board of directors removed the three-year time limitation on February 8, 2018. To date, we have repurchased $133.5 million of our common stock and have the ability to repurchase the remaining $166.5 million.

We have no obligation to repurchase additional shares, and the timing, actual number and value of the shares that are repurchased, if any, will be at the discretion of management and will depend on a number of factors, including market conditions, the cost of repurchasing shares, the availability of alternative investment opportunities, liquidity, and other factors deemed appropriate. Repurchases may be suspended, terminated or modified at any time for any reason. Any repurchased shares will have the status of treasury shares and may be used, if and when needed, for general corporate purposes.

Sources and Uses of Cash

	Twelve months ended December 31,			Change	
(dollars in millions)	2022	2021	2020	2022 vs. 2021	2021 vs. 2020
Cash provided by operating activities	$ 297.2	$ 808.3	$ 787.6	$ (511.1)	$ 20.7
Cash used in investing activities	(723.9)	(2,212.9)	(267.2)	1,489.0	(1,945.7)
Cash provided by (used in) financing activities	(820.5)	2,762.3	(296.9)	(3,582.8)	3,059.2
Effect of exchange rate changes on cash and cash equivalents	(9.9)	(8.0)	(4.4)	(1.9)	(3.6)
Net change in cash and cash equivalents	$ (1,257.1)	$ 1,349.7	$ 219.1	$ (2,606.8)	$ 1,130.6

Operating Activities

For 2022, the decrease in cash provided by continuing operations was due primarily to payments for taxes due on the gain on the divestiture of our Healthcare business made in 2022, an increase in interest expense and an increase in cash paid for accrued incentive and other compensation. For 2021, the increase in cash provided by operating activities was due primarily to an increase in operating performance and a decrease in interest expense, partially offset by an increase in working capital.

Investing Activities

For 2022, the decrease in cash used in investing activities was due primarily to 508.1 million of cash used for acquisitions in 2022 compared with $3,596.1 million in 2021, partially offset by $103.6 million of proceeds from the sale of discontinued operations in 2022 compared with $1,706.8 million in 2022 and an increase in capital expenditures. For 2021, the increase in cash used in investing activities was due primarily to the acquisitions of Neustar and Sontiq, various investments in nonconsolidated affiliates, and an increase in capital expenditures, partially offset by the proceeds from the sale of our Healthcare business.

Financing Activities

For 2022, the decrease in cash of financing activities was due primarily to net debt proceeds in 2021 to fund our acquisitions partially offset by an increase in debt prepayments in 2022. For 2021, the increase in cash provided by financing activities was due primarily to debt proceeds used to fund the Neustar and Sontiq acquisitions, partially offset by the repayment of the debt from a portion of the proceeds received from the sale of our Healthcare business and increased debt financing fees.

Capital Expenditures

We make capital expenditures to grow our business by developing new and enhanced capabilities, to increase the effectiveness and efficiency of the organization and to reduce risks. We make capital expenditures for product development, disaster recovery, security enhancements, regulatory compliance, and the replacement and upgrade of existing equipment at the end of its useful life.

For 2022, cash paid for capital expenditures increased $74.0 million to $298.2 million. For 2021, cash paid for capital expenditures increased $18.6 million to $224.2 million.

Debt

Hedges

On November 16, 2022, we entered into new interest rate swap agreements with various counterparties that effectively fix our LIBOR exposure on a portion of our Senior Secured Term Loan or similar replacement debt. The new swaps commenced on December 30, 2022, and expire on December 31, 2024, with a current aggregate notional amount of $1,320.0 million that amortizes each quarter. The swaps require us to pay fixed rates varying between 4.4105% and 4.4465% in exchange for receiving a variable rate that matches the variable rate on our loans. We have designated these swap agreements as cash flow hedges.

On December 23, 2021, we entered into interest rate swap agreements with various counterparties that effectively fix our LIBOR exposure on a portion of our Senior Secured Term Loan or similar replacement debt. The swaps commenced on December 31, 2021, and expire on December 31, 2026, with a current aggregate notional amount of $1,584.0 million that

amortizes each quarter. The swaps require us to pay fixed rates varying between 1.4280% and 1.4360% in exchange for receiving a variable rate that matches the variable rate on our loans. We have designated these swap agreements as cash flow hedges.

On March 10, 2020, we entered into two tranches of interest rate swap agreements with various counterparties that effectively fix our LIBOR exposure on a portion of our Senior Secured Term Loans or similar replacement debt. The first swap commenced on June 30, 2020, and expired on June 30, 2022. The second swap commences on June 30, 2022, and expires on June 30, 2025, with a current aggregate notional amount of $1,100.0 million that amortizes each quarter after it commences. The second swap requires us to pay fixed rates varying between 0.9125% and 0.9280% in exchange for receiving a variable rate that matches the variable rate on our loans. We have designated these swap agreements as cash flow hedges.

On December 17, 2018, we entered into interest rate swap agreements with various counterparties that effectively fix our LIBOR exposure on a portion of our Senior Secured Term Loans or similar replacement debt, which is currently fixed at 2.702% and 2.706%. These agreements expired on December 30, 2022, and were previously designated as cash flow hedges.

Effect of certain debt covenants

A breach of any of the covenants under the agreements governing our debt could limit our ability to borrow funds under the senior secured revolving line of credit and could result in a default under the Senior Secured Credit Facility. Upon the occurrence of an event of default under the senior secured credit facility, the lenders could elect to declare all amounts then outstanding to be immediately due and payable, and the lenders could terminate all commitments to extend further credit. If we were unable to repay the amounts declared due, the lenders could proceed against any collateral granted to them to secure that indebtedness.

With certain exceptions, the Senior Secured Credit Facility obligations are secured by a first-priority security interest in substantially all of the assets of Trans Union LLC, including its investment in subsidiaries. The Senior Secured Credit Facility contains various restrictions and nonfinancial covenants, along with a senior secured net leverage ratio test. The nonfinancial covenants include restrictions on dividends, investments, dispositions, future borrowings and other specified payments, as well as additional reporting and disclosure requirements. The senior secured net leverage test must be met as a condition to incur additional indebtedness, make certain investments, and may be required to make certain restricted payments. The senior secured net leverage ratio must not exceed 5.5-to-1 at any such measurement date. Under the terms of the Senior Secured Credit Facility, TransUnion may make dividend payments up to the greater of $100 million or 10.0% of Consolidated EBITDA per year, or an unlimited amount provided that no default or event of default exists and so long as the total net leverage ratio does not exceed 4.75-to-1. As of December 31, 2022, we were in compliance with all debt covenants.

Our ability to meet our liquidity needs or to pay dividends on our common stock depends on our subsidiaries' earnings, the terms of their indebtedness, and other contractual restrictions.

For additional information about our debt and hedge, see Part II, Item 8, "Financial Statements and Supplementary Data - Notes to Consolidated Financial Statements," Note 12, "Debt."

Contractual Obligations

Refer to Part II, Item 8, "Financial Statements and Supplementary Data - Notes to Consolidated Financial Statements," Note 12, "Debt," Note 13, "Leases" and Note 21, "Commitments," for information about our long-term debt obligations, noncancelable lease obligations, and noncancelable purchase obligations as of December 31, 2022.

Application of Critical Accounting Estimates

We prepare our consolidated financial statements in conformity with generally accepted accounting principles ("GAAP"). See Part II, Item 8, "Financial Statements and Supplementary Data - Notes to Consolidated Financial Statements" Note 1, "Significant Accounting and Reporting Policies," for additional information about our significant accounting and reporting policies that require us to make certain judgments and estimates in reporting our operating results and our assets and liabilities. The following paragraphs describe the accounting policies that require significant judgment and estimates due to inherent uncertainty or complexity.

Goodwill

As of December 31, 2022, our consolidated balance sheet included goodwill of $5,551.4 million and we did not have any other indefinite-lived intangible assets. We conduct an impairment test in the fourth quarter of each year, or more frequently if events or circumstances indicate that the carrying value of goodwill may be impaired.

We have the option to first perform a qualitative analysis to determine if it is more likely than not that the fair value of a reporting unit is less than its carrying value. If the qualitative analysis indicates that an impairment is more likely than not for any reporting unit, we perform a quantitative impairment test for that reporting unit. We have the option to bypass the qualitative analysis for any reporting unit and proceed directly to performing a quantitative impairment test.

Our quantitative impairment test consists of a fair value calculation for each reporting unit that combines an income approach, using the discounted cash flow method, and a market approach, using the guideline public company method. The quantitative impairment test requires the application of a number of significant assumptions, including estimates of future revenue growth rates, EBITDA margins, discount rates, and market multiples. The projected future revenue growth rates and EBITDA margins, and the resulting projected cash flows of each reporting unit are based on historical experience and internal operating plans reviewed by management, extrapolated over the forecast period. Discount rates are determined using a weighted average cost of capital adjusted for risk factors specific to each reporting unit. Market multiples are based on the Guideline Public Company Method using comparable publicly traded company multiples of EBITDA for a group of benchmark companies.

We believe the assumptions that we use in our qualitative and quantitative analysis are reasonable and consistent with assumptions that would be used by other marketplace participants. However, such assumptions are inherently uncertain, and a change in assumptions could change the estimated fair values of our reporting units and, therefore, future impairment charges could be required, which could be material to the consolidated financial statements. In order to ensure the assumptions used in the analysis are reasonable, we reconcile the sum of the fair value of the reporting units to our market capitalization adjusted for an estimated control premium.

In 2022, we elected to bypass the qualitative goodwill impairment analysis, and instead performed a quantitative goodwill impairment test for all reporting units. For each of our reporting units, the fair value exceeded the carrying value and no impairment was recorded.

We engaged a third-party valuation specialist to assist in our analysis of the fair value of our reporting units. All judgments, significant assumptions and estimates, and forecasts were either provided by or reviewed by us. While we chose to utilize a third-party valuation specialist for assistance, the fair value analysis reflects the conclusions of management and not those of any third party. We believe the judgments and assumptions we have used are reasonable and consistent with assumptions that would be used by other marketplace participants.

For our United Kingdom reporting unit, we had $681.2 million of goodwill as of December 31, 2022. The calculated excess fair value over carrying value was less than 10% of its carrying value as of October 31, 2022, our annual assessment date. Therefore, we concluded no impairment existed for this reporting unit. The decrease in excess fair value in the current period compared with the prior period is a result of market conditions in the U.K., including public policy uncertainty, inflation, and currency pressure, which have decreased short-term demand for our products and services, increased risk-free rates, and decreased market multiples.

Significant assumptions for the United Kingdom reporting unit include estimates of future revenue growth rates, EBITDA margins, discount rates, and market multiples. The revenue growth rate assumptions used in our model reflect management's best estimate of growth rates that incorporate identified growth initiatives consistent with historical growth strategies implemented in other international regions. EBITDA margin assumptions reflect expansion commensurate with forecasted revenue growth rates and are consistent with historical EBITDA margins realized in other reporting units operating in developed markets. Our estimates of future revenue growth rates and EBITDA margins for our United Kingdom reporting unit incorporate our current expectations of unfavorable U.K.-specific macroeconomic conditions, including the levels of interest rates, inflation, employment levels, consumer confidence and housing demand. If these unfavorable macroeconomic conditions persist longer than we currently expect, or are worse than we currently expect, our estimates of revenue growth rates and EBITDA margins would decline, which could lead to an impairment of goodwill in the United Kingdom reporting unit.

We performed a sensitivity assessment for the significant assumptions used with the goodwill impairment analysis for the United Kingdom reporting unit, holding all other assumptions constant: A hypothetical 70 basis point increase to the discount rate, holding all other assumptions constant, would result in the fair value determined by the income approach being less than the carrying value, triggering an impairment. As of December 31, 2022, given the decrease in risk-free interest rates, we estimate that the discount rate for the United Kingdom reporting unit has declined approximately 50 basis points compared with October 31, 2022, which would increase the fair value of the reporting unit. A hypothetical decrease in the average annual revenue growth rates from 7.6% to 6.2% over the entire forecast period, holding all other assumptions constant, would result in the fair value determined by the income approach being less than the carrying value, triggering an impairment. A hypothetical decrease in EBITDA margins of 340 basis points in each year over the entire forecast period, holding all other assumptions constant, would result in the fair value determined by the income approach being less than the carrying value, triggering an impairment. We will continue to monitor the assumptions used in our fair value analysis to determine if a triggering event has occurred that indicates an impairment is more likely than not for this reporting unit.

Business Acquisitions

On April 8, 2022, we completed our acquisition of VF for $505.7 million in cash. On December 1, 2021, we completed the acquisitions of Neustar and Sontiq for $3,100.1 million and $642.6 million, respectively, in cash.

The transactions were accounted for as business combinations under the acquisition method of accounting. The acquisition method requires, among other things, that assets acquired and liabilities assumed in a business combination generally be recognized at their fair values as of the acquisition date. The determination of fair value requires management to make significant estimates and assumptions. The excess of the purchase prices over the fair values of the acquired net assets has been recorded as goodwill.

As of December 31, 2022, the valuation of the assets acquired and liabilities assumed is substantially complete, and we expect to complete this analysis within one year from the acquisition date. The purchase price for the VF acquisition has been finalized.

The purchase price and valuations of the assets acquired and liabilities assumed for the Neustar and Sontiq acquisitions have been finalized as of December 31, 2022.

In determining the fair value of the identifiable intangible assets, we utilized various forms of the income approach, depending on the asset being valued. The determination of fair values requires significant judgment related to cash flow forecasts, discount rates reflecting the risk inherent in each cash flow stream, competitive trends, market comparables and other factors. Other inputs included historical data, current and anticipated market conditions, and growth rates.

The intangible assets were valued using the following valuation approaches:

Customer Relationships

We valued customer relationships using the multi-period excess-earnings method, a form of the income approach, which required the application of judgment for significant assumptions. Significant assumptions include customer attrition rates, EBITDA margins, and discount rates.

Technology and software

We valued the developed technology using the relief-from-royalty method, a form of the income approach, which required the application of judgment for significant assumptions. Significant assumptions include the royalty rate, economic depreciation factors, and discount rates.

Other identifiable intangible assets

Other identifiable intangible assets include trade names and trademarks and non-compete agreements for key employees, which are not material. Trade names and trademarks were valued using the relief from royalty method and non-compete agreements were valued using the lost income method.

We engaged a third-party valuation specialist to assist in our analysis of the fair value of the acquired intangibles. All judgments, significant assumptions and estimates, and forecasts were either provided by or reviewed by us. While we chose to utilize a third-party valuation specialist for assistance, the fair value analysis and related valuations reflect the conclusions of management and not those of any third party. We believe the judgments and assumptions we have used are reasonable and consistent with assumptions that would be used by other marketplace participants, however such assumptions are inherently uncertain. For the VF acquisition, a change in assumptions could change the estimated fair values of the intangible assets, which could have a material impact on our consolidated financial statements.

Legal Contingencies

We are routinely named as defendants in, or parties to, various legal actions and proceedings relating to our current or past business operations. These actions generally assert claims for violations of federal or state credit reporting, consumer protection or privacy laws, or common law claims related to the unfair treatment of consumers, and may include claims for substantial or indeterminate compensatory or punitive damages, or injunctive relief, and may seek business practice changes. We believe that most of these claims are either without merit or we have valid defenses to the claims, and we vigorously defend these matters or seek non-monetary or small monetary settlements, if possible. However, due to the uncertainties inherent in litigation, we cannot predict the outcome of each claim in each instance.

In the ordinary course of business, we also are subject to governmental and regulatory examinations, information-gathering requests, investigations and proceedings (both formal and informal), certain of which may result in adverse judgments, settlements, fines, penalties, injunctions or other relief. In connection with formal and informal inquiries by these regulators, we routinely receive requests, subpoenas and orders seeking documents, testimony, and other information in connection with various aspects of our activities.

In view of the inherent unpredictability of legal and regulatory matters, particularly where the damages sought are substantial or indeterminate or when the proceedings or investigations are in the early stages, we cannot determine with any degree of certainty the timing or ultimate resolution of legal and regulatory matters or the eventual loss, fines or penalties, if any, that may result from such matters. We establish reserves for legal and regulatory matters when those matters present loss contingencies that are both probable and can be reasonably estimated. However, for certain of the matters, we are not able to reasonably estimate our exposure because damages have not been specified and (i) the proceedings are in early stages, (ii) there is uncertainty as to the likelihood of a class being certified or the ultimate size of the class, (iii) there is uncertainty as to the outcome of similar matters pending against our competitors, (iv) there are significant factual issues to be resolved, and/or (v) there are legal issues of a first impression being presented. The actual costs of resolving legal and regulatory matters, however, may be substantially higher than the amounts reserved for those matters, and an adverse outcome in certain of these matters could have a material adverse effect on our consolidated financial statements in particular quarterly or annual periods. We accrue amounts for certain legal and regulatory matters for which losses were considered to be probable of occurring based on our best estimate of the most likely outcome. It is reasonably possible actual losses could be significantly different from our current estimates. In addition, there are some matters for which it is reasonably possible that a loss will occur, however we cannot estimate a range of the potential losses for these matters. Legal fees incurred in connection with ongoing legal and regulatory matters are considered a period cost and are expensed as incurred.

To reduce our exposure to an unexpected significant monetary award resulting from an adverse judicial decision, we maintain insurance that we believe is appropriate and adequate based on our historical experience. We regularly advise our insurance carriers of the claims, threatened or pending, against us in legal and regulatory matters and generally receive a reservation of rights letter from the carriers when such claims exceed applicable deductibles. We are not aware of any significant monetary claim that has been asserted against us in the course of pending litigation except for the lawsuit filed by the CFPB referenced below, that would not have some level of coverage by insurance after the relevant deductible, if any, is met.

As of December 31, 2022 and 2021, we accrued $125.0 million and $85.6 million, respectively, for anticipated claims. These amounts were recorded in other accrued liabilities in the consolidated balance sheets and the associated expenses were recorded in selling, general and administrative expenses in the consolidated statements of income. Legal fees incurred in connection with ongoing litigation are considered period costs and are expensed as incurred.

See Part II, Item 8 “Financial Statements and Supplementary Data - Notes to Consolidated Financial Statements,” Note 22, “Contingencies,” for further information.

Income Taxes

As of December 31, 2022, our consolidated balance sheet included non-current deferred tax liabilities of $762.0 million. Certain deferred tax assets, including net operating loss and foreign tax credit carryforwards, may be deducted from future taxable income in computing our federal income tax liability. Our deferred tax liability includes deferred tax assets and liabilities resulting from net operating loss and tax credit carryforwards, temporary differences, and unrecognized tax benefits for uncertain tax positions.

We have made certain judgments and estimates to determine various tax amounts recorded, including future tax rates, future taxable income, whether it is more likely than not a tax position will be sustained, and the amount of the unrecognized tax benefit to record. We have deferred tax assets related to loss and credit carryforwards of $179.2 million, net of valuation allowances of $98.9 million. Our estimate of the amount of the deferred tax asset we can realize requires significant assumptions about projected revenues and income that are impacted by future market and economic conditions. We believe the judgments and estimates used are reasonable, but events may arise that were not anticipated and the outcome of tax audits may differ significantly from what is expected.

Recent Accounting Pronouncements

For information about recent accounting pronouncements and the potential impact on our consolidated financial statements, see Part II, Item 8, “Financial Statements and Supplementary Data - Notes to Consolidated Financial Statements,” Note 1, “Significant Accounting and Reporting Policies.”

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

In the normal course of business we are exposed to market risk, primarily from changes in variable interest rates and foreign currency exchange rates, which could impact our results of operations and financial position. We manage the exposure to this market risk through our regular operating and financing activities. We may use derivative financial instruments, such as foreign currency and interest rate hedges, but only as a risk management tool and not for speculative or trading purposes.

Interest Rate Risk

Our Senior Secured Credit Facility consists of senior secured term loans and a $300.0 million Senior Secured Revolving Line of Credit. Interest rates on these borrowings are based, at our election, on LIBOR or an alternate base rate, subject to floors, plus applicable margins based on applicable net leverage ratios. As of December 31, 2022, essentially all of our outstanding debt was variable-rate debt. As of December 31, 2022, our variable-rate debt had a weighted-average interest rate of 6.35% and a weighted-average life of 4.41 years. During 2022, a 10% change in the average LIBOR rates utilized in the calculation of our actual interest expense would have increased our interest expense by $3.2 million for the year.

On November 16, 2022, we entered into interest rate swap agreements with various counterparties that effectively fix our LIBOR exposure on a portion of our Senior Secured Term Loan or similar replacement debt. The new swaps commenced on December 30, 2022, and expire on December 31, 2024, with a current aggregate notional amount of $1,320.0 million that amortizes each quarter. The new swaps require us to pay fixed rates varying between 4.4105% and 4.4465% in exchange for receiving a variable rate that matches the variable rate on our loans. We have designated these swap agreements as cash flow hedges.

On December 23, 2021, we entered into interest rate swap agreements with various counterparties that effectively fix our LIBOR exposure on a portion of our Senior Secured Term Loan or similar replacement debt. The new swaps commenced on December 31, 2021, and expire on December 31, 2026, with a current aggregate notional amount of $1,584.0 million that amortizes each quarter. The tranche requires us to pay fixed rates varying between 1.4280% and 1.4360% in exchange for receiving a variable rate that matches the variable rate on our loans. We have designated these swap agreements as cash flow hedges.

On March 10, 2020, we entered into two interest rate swap agreements with various counterparties that effectively fix our LIBOR exposure on a portion of our Senior Secured Term Loans or similar replacement debt. The first swap commenced on June 30, 2020, and expired on June 30, 2022. The second swap commences on June 30, 2022, and expires on June 30, 2025, with an initial aggregate notional amount of $1,100.0 million that amortizes each quarter after it commences. The second swap requires us to pay fixed rates varying between 0.9125% and 0.9280% in exchange for receiving a variable rate that matches the variable rate on our loans. We have designated these swap agreements as cash flow hedges.

Based on the amount of unhedged outstanding variable-rate debt, we have a material exposure to interest rate risk. In the future our exposure to interest rate risk may change due to changes in the amount borrowed, changes in interest rates, or changes in the amount we have hedged. The amount of our outstanding debt, and the ratio of fixed-rate debt to variable-rate debt, can be expected to vary as a result of future business requirements, market conditions or other factors.

See Part II, Item 8, “Financial Statements and Supplementary Data - Notes to Consolidated Financial Statements,” Note 12, “Debt,” for additional information about interest rates on our debt.

Foreign Currency Exchange Rate Risk

A substantial majority of our revenue, expense and capital expenditure activities are transacted in U.S. dollars. However, we transact business in a number of foreign currencies, including British pounds sterling, the South African rand, the Canadian dollar, the Indian rupee, the Colombian peso and the Brazilian real. In reporting the results of our foreign operations, we benefit from a weaker U.S. dollar and are adversely affected by a stronger U.S. dollar relative to the foreign currencies.

We are required to translate the assets and liabilities of our foreign subsidiaries that are measured in foreign currencies at the applicable period-end exchange rate in our consolidated balance sheets. We are required to translate revenue and expenses at the average exchange rates prevailing during the year in our consolidated statements of income. The resulting translation adjustment is included in other comprehensive income, as a component of stockholders’ equity. Transaction gains and losses that arise from exchange rate fluctuations on transactions denominated in a currency other than the functional currency are included in other income and expense as incurred.

In 2022, revenue attributable to our International segment was $755.9 million, and Adjusted EBITDA attributable to our International segment was $329.3 million. A 10% change in the value of the U.S. dollar relative to a basket of the currencies for all foreign countries in which we had operations during 2022 would have changed our revenue by $75.6 million and our Adjusted EBITDA by $32.9 million. We derive an insignificant amount of international revenue and Adjusted EBITDA from our U.S. Markets and Consumer Interactive segments.

A 10% change in the value of the U.S. dollar relative to a basket of currencies for all foreign countries in which we had operations would not have had a significant impact on our 2022 realized foreign currency transaction gains and losses.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Index to Financial Statements

Report of Independent Registered Public Accounting Firm PricewaterhouseCoopers LLP (PCAOB ID 238)	74
Consolidated Balance Sheets	76
Consolidated Statements of Income	77
Consolidated Statements of Comprehensive Income	78
Consolidated Statements of Cash Flows	79
Consolidated Statements of Stockholders' Equity	80
Notes to Consolidated Financial Statements	83

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of TransUnion

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of TransUnion and its subsidiaries (the "Company") as of December 31, 2022 and 2021, and the related consolidated statements of income, of comprehensive income, of stockholders' equity and of cash flows for each of the three years in the period ended December 31, 2022, 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, 2022, 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, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022 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, 2022, 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 Management's Report on Internal Control over Financial Reporting appearing under Item 9A. 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.

As described in Management's Report on Internal Control over Financial Reporting, management has excluded Argus Information and Advisory Services, Inc. and Commerce Signals, Inc. (collectively, "Argus") from its assessment of internal control over financial reporting as of December 31, 2022, because they were acquired by the Company in a business combination during 2022. We have also excluded Argus from our audit of internal control over financial reporting. Argus is comprised of wholly-owned subsidiaries whose total assets and total revenues excluded from management's assessment and our audit of internal control over financial reporting collectively represent less than 1% of total assets, and approximately 2% of total revenues, of the related consolidated financial statement amounts as of and for the year ended December 31, 2022**.**

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.

Goodwill Impairment Assessment – United Kingdom Reporting Unit

As described in Notes 1 and 6 to the consolidated financial statements, the Company's consolidated goodwill balance was $5,551.4 million as of December 31, 2022, of which $681.2 million was allocated to the United Kingdom reporting unit. Management conducts an impairment test in the fourth quarter of each year, or more frequently if events or circumstances indicate that the carrying value of goodwill may be impaired. Management performed a quantitative impairment test for all reporting units. To determine the fair value of each reporting unit, management uses a combination of an income approach, using the discounted cash flow method, and a market approach, using the guideline public company method. For each reporting unit, management compares the fair value to its carrying value including goodwill. If the fair value of the reporting unit is less than its carrying value, management records an impairment charge based on that difference, up to the amount of goodwill recorded in that reporting unit. The quantitative impairment test requires the application of a number of significant assumptions by management, including estimates of future revenue growth rates, EBITDA margins, discount rates, and market multiples.

The principal considerations for our determination that performing procedures relating to the goodwill impairment assessment of the United Kingdom reporting unit is a critical audit matter are (i) the significant judgment by management when developing the fair value of the reporting unit; (ii) a high degree of auditor judgment, subjectivity, and effort in performing procedures and evaluating management's significant assumptions related to the estimates of future revenue growth rates, EBITDA margins, the discount rate, and market multiple; and (iii) the audit effort involved the use of professionals with specialized skill and knowledge.

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 management's goodwill impairment assessment, including controls over the valuation of the United Kingdom reporting unit. These procedures also included, among others (i) testing management's process for developing the fair value estimate; (ii) evaluating the appropriateness of the discounted cash flow method and guideline public company method; (iii) testing the completeness and accuracy of underlying data used in the valuation methods; and (iv) evaluating the significant assumptions used by management related to the estimates of future revenue growth rates, EBITDA margins, the discount rate, and market multiple. Evaluating management's assumptions related to the estimates of future revenue growth rates and EBITDA margins involved evaluating whether the assumptions used by management were reasonable considering (i) the current and past performance of the United Kingdom reporting unit; (ii) the consistency with external market data; and (iii) whether these assumptions were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in the evaluation of management's discounted cash flow method and guideline public company method, and the discount rate and market multiple assumptions.

/s/ PricewaterhouseCoopers LLP
Chicago, Illinois
February 14, 2023

We have served as the Company's auditor since 2020.

TRANSUNION AND SUBSIDIARIES

Consolidated Balance Sheets

(in millions, except per share data)

	December 31, 2022	December 31, 2021
Assets		
Current assets:		
Cash and cash equivalents	$ 585.3	$ 1,842.4
Trade accounts receivable, net of allowance of $11.0 and $10.7	602.2	558.0
Other current assets	262.7	231.6
Total current assets	1,450.2	2,632.0
Property, plant and equipment, net of accumulated depreciation and amortization of $711.3 and $625.4	218.2	247.7
Goodwill	5,551.4	5,525.7
Other intangibles, net of accumulated amortization of $2,268.6 and $1,908.9	3,675.5	3,770.6
Other assets	771.0	459.0
Total assets	$ 11,666.3	$ 12,635.0
Liabilities and stockholders' equity		
Current liabilities:		
Trade accounts payable	$ 250.4	$ 270.2
Short-term debt and current portion of long-term debt	114.6	114.6
Other current liabilities	540.5	972.2
Total current liabilities	905.5	1,357.0
Long-term debt	5,555.5	6,251.3
Deferred taxes	762.0	787.6
Other liabilities	173.9	232.9
Total liabilities	7,396.9	8,628.8
Stockholders' equity:		
Common stock, $0.01 par value; 1.0 billion shares authorized at December 31, 2022 and December 31, 2021; 198.7 million and 197.4 million shares issued as of December 31, 2022 and December 31, 2021, respectively; and 192.7 million and 191.8 million shares outstanding as of December 31, 2022 and December 31, 2021, respectively	2.0	2.0
Additional paid-in capital	2,290.3	2,188.9
Treasury stock at cost; 6.0 million and 5.6 million shares at December 31, 2022 and December 31, 2021, respectively	(284.5)	(252.0)
Retained earnings	2,446.6	2,254.6
Accumulated other comprehensive loss	(284.5)	(285.4)
Total TransUnion stockholders' equity	4,169.9	3,908.1
Noncontrolling interests	99.5	98.1
Total stockholders' equity	4,269.4	4,006.2
Total liabilities and stockholders' equity	$ 11,666.3	$ 12,635.0

See accompanying notes to consolidated financial statements.

TRANSUNION AND SUBSIDIARIES

Consolidated Statements of Income

(in millions, except per share data)

	Twelve Months Ended December 31,		
	2022	2021	2020
Revenue	$ 3,709.9	$ 2,960.2	$ 2,530.6
Operating expenses			
Cost of services (exclusive of depreciation and amortization below)	1,222.9	991.6	853.9
Selling, general and administrative	1,337.4	943.9	829.7
Depreciation and amortization	519.0	377.0	346.8
Total operating expenses	3,079.3	2,312.5	2,030.4
Operating income	630.5	647.7	500.3
Non-operating income and (expense)			
Interest expense	(230.9)	(112.6)	(126.2)
Interest income	4.7	3.4	5.6
Earnings from equity method investments	13.0	12.0	8.9
Other income and (expense), net	(30.0)	(49.2)	0.9
Total non-operating income and (expense)	(243.3)	(146.3)	(110.8)
Income from continuing operations before income taxes	387.2	501.4	389.5
Provision for income taxes	(119.9)	(130.9)	(83.7)
Income from continuing operations	267.3	370.5	305.7
Discontinued operations, net of tax	17.4	1,031.7	49.8
Net income	284.7	1,402.2	355.6
Less: net income attributable to noncontrolling interests	(15.2)	(15.0)	(12.4)
Net income attributable to TransUnion	$ 269.5	$ 1,387.1	$ 343.2
Income from continuing operations	$ 267.3	$ 370.5	$ 305.7
Less: income from continuing operations attributable to noncontrolling interests	(15.2)	(15.0)	(12.4)
Income from continuing operations attributable to TransUnion	252.1	355.5	293.4
Discontinued operations, net of tax	17.4	1,031.7	49.8
Net income attributable to TransUnion	$ 269.5	$ 1,387.1	$ 343.2
Basic earnings per common share from:			
Income from continuing operations attributable to TransUnion	$ 1.31	$ 1.86	$ 1.54
Discontinued operations, net of tax	0.09	5.39	0.26
Net Income attributable to TransUnion	$ 1.40	$ 7.25	$ 1.81
Diluted earnings per common share from:			
Income from continuing operations attributable to TransUnion	$ 1.31	$ 1.84	$ 1.53
Discontinued operations, net of tax	0.09	5.35	0.26
Net Income attributable to TransUnion	$ 1.40	$ 7.19	$ 1.79
Weighted-average shares outstanding:			
Basic	192.5	191.4	189.9
Diluted	193.1	193.0	192.2

See accompanying notes to consolidated financial statements.

TRANSUNION AND SUBSIDIARIES

Consolidated Statements of Comprehensive Income

(in millions)

	Twelve Months Ended December 31,		
	2022	2021	2020
Net income	$ 284.7	$ 1,402.2	$ 355.6
Other comprehensive income:			
Foreign currency translation:			
Foreign currency translation adjustment	(195.7)	(66.4)	8.9
Benefit (provision) for income taxes	(0.7)	0.3	0.8
Foreign currency translation, net	(196.4)	(66.1)	9.7
Hedge instruments:			
Net change on interest rate cap	—	—	4.1
Net change on interest rate swap	260.1	67.3	(43.5)
(Provision) benefit for income taxes	(64.9)	(16.8)	9.5
Hedge instruments, net	195.2	50.5	(29.9)
Available-for-sale securities:			
Net unrealized gain (loss)	(0.3)	—	0.3
Benefit (provision) for income taxes	0.1	—	(0.1)
Available-for-sale securities, net	(0.2)	—	0.2
Total other comprehensive (loss) income, net of tax	(1.4)	(15.6)	(20.0)
Comprehensive income	283.3	1,386.6	335.6
Less: comprehensive income attributable to noncontrolling interests	(12.9)	(12.7)	(12.9)
Comprehensive income attributable to TransUnion	$ 270.4	$ 1,373.9	$ 322.7

See accompanying notes to consolidated financial statements.

TRANSUNION AND SUBSIDIARIES
Consolidated Statements of Cash Flows
(in millions)

	Twelve Months Ended December 31,		
	2022	2021	2020
Cash flows from operating activities:			
Net income	$ 284.7	$ 1,402.2	$ 355.6
Less: Discontinued operations, net of tax	17.4	1,031.7	49.8
Income from continuing operations	267.3	370.5	305.7
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	519.0	377.0	346.8
Loss on repayment of loans	9.4	17.9	0.4
Deferred taxes	(88.9)	(17.2)	(36.1)
Stock-based compensation	82.8	69.2	44.3
Other	22.6	(13.1)	8.1
Changes in assets and liabilities:			
Trade accounts receivable	(37.5)	(36.2)	(15.6)
Other current and long-term assets	(17.7)	(20.9)	(3.5)
Trade accounts payable	(20.7)	45.7	18.1
Other current and long-term liabilities	(435.3)	(33.5)	48.1
Cash provided by operating activities of continuing operations	301.0	759.4	716.3
Cash (used in) provided by operating activities of discontinued operations	(3.8)	48.9	71.3
Cash provided by operating activities	297.2	808.3	787.6
Cash flows from investing activities:			
Capital expenditures	(298.2)	(224.2)	(205.6)
Proceeds from sale/maturity of other investments	143.5	36.3	90.6
Purchases of other investments	(146.1)	(66.9)	(73.5)
Investments in consolidated affiliates, net of cash acquired	(508.1)	(3,596.1)	(57.9)
Investments in nonconsolidated affiliates and purchase of convertible notes	(16.2)	(75.4)	(8.6)
Proceeds from disposal of discontinued operations	103.6	1,706.8	1.6
Other	2.7	(1.1)	2.4
Cash used in investing activities of continuing operations	(718.8)	(2,220.6)	(251.0)
Cash (used in) provided by investing activities of discontinued operations	(5.1)	7.7	(16.2)
Cash used in investing activities	(723.9)	(2,212.9)	(267.2)
Cash flows from financing activities:			
Proceeds from Term Loans	—	3,740.0	—
Repayments of Term Loans	—	(640.0)	—
Repayments of debt	(714.6)	(140.8)	(208.8)
Debt financing fees	—	(68.8)	—
Proceeds from issuance of common stock and exercise of stock options	18.7	21.9	22.9
Dividends to shareholders	(77.8)	(69.8)	(57.6)
Distributions to noncontrolling interests	(11.5)	(11.0)	(10.9)
Employee taxes paid on restricted stock units recorded as treasury stock	(32.5)	(36.8)	(36.1)
Payment of contingent consideration	(2.8)	(32.4)	(6.4)
Cash (used in) provided by financing activities of continuing operations	(820.5)	2,762.3	(296.9)
Effect of exchange rate changes on cash and cash equivalents	(9.9)	(8.0)	(4.4)
Net change in cash and cash equivalents	(1,257.1)	1,349.7	219.1
Cash and cash equivalents, beginning of period	1,842.4	492.7	273.6
Cash and cash equivalents, end of period	$ 585.3	$ 1,842.4	$ 492.7
Supplemental disclosure of cash flow information:			
Cash paid during the period for:			
Interest	$ 312.3	$ 109.1	$ 120.0
Income taxes, net of refunds	$ 573.6	$ 181.2	$ 131.9

See accompanying notes to consolidated financial statements.

TRANSUNION AND SUBSIDIARIES
Consolidated Statements of Stockholders' Equity
(in millions)

	Common Stock							
	Shares	Amount	Paid-In Capital	Treasury Stock	Retained Earnings	Accumulated Other Comprehensive Loss	Noncontrolling Interests	Total
Balance, December 31, 2019	188.7	$ 1.9	$ 2,022.3	$ (179.2)	$ 652.0	$ (251.6)	$ 94.0	$ 2,339.4
Net income	—	—	—	—	343.2	—	12.4	355.6
Other comprehensive income (loss)	—	—	—	—	—	(20.5)	0.5	(20.0)
Distributions to noncontrolling interests	—	—	—	—	—	—	(10.9)	(10.9)
Noncontrolling interests of acquired businesses	—	—	(3.7)	—	—	—	0.3	(3.4)
Stock-based compensation	—	—	43.7	—	—	—	—	43.7
Employee share purchase plan	0.2	—	19.1	—	—	—	—	19.1
Exercise of stock options	0.9	0.1	6.7	—	—	—	—	6.8
Vesting of restricted stock units and performance stock units	1.1	—	—	—	—	—	—	—
Treasury stock purchased	(0.4)	—	—	(36.1)	—	—	—	(36.1)
Dividends to shareholders	—	—	—	—	(57.7)	—	—	(57.7)
Other	—	—	—	—	—	—	(0.4)	(0.4)
Balance, December 31, 2020	190.5	$ 2.0	$ 2,088.1	$ (215.2)	$ 937.4	$ (272.1)	$ 95.9	$ 2,636.1

TRANSUNION AND SUBSIDIARIES
Consolidated Statements of Stockholders' Equity—Continued
(in millions)

	Common Stock							
	Shares	Amount	Paid-In Capital	Treasury Stock	Retained Earnings	Accumulated Other Comprehensive Loss	Noncontrolling Interests	Total
Net income	—	$ —	$ —	$ —	$ 1,387.1	$ —	$ 15.0	$ 1,402.2
Other comprehensive income	—	—	—	—	—	(13.3)	(2.3)	(15.6)
Distributions to noncontrolling interests	—	—	—	—	—	—	(11.0)	(11.0)
Stock-based compensation	—	—	75.7	—	—	—	—	75.7
Employee share purchase plan	0.2	—	22.2	—	—	—	—	22.2
Exercise of stock options	0.3	—	2.9	—	—	—	—	2.9
Vesting of restricted stock units and performance stock units	1.2	—	—	—	—	—	—	—
Treasury stock purchased	(0.4)	—	—	(36.8)	—	—	—	(36.8)
Dividends to shareholders	—	—	—	—	(69.9)	—	—	(69.9)
Other	—	—	—	—	—	—	0.5	0.5
Balance, December 31, 2021	191.8	$ 2.0	$ 2,188.9	$ (252.0)	$ 2,254.6	$ (285.4)	$ 98.1	$ 4,006.2

TRANSUNION AND SUBSIDIARIES
Consolidated Statements of Stockholders' Equity—Continued
(in millions)

	Common Stock							
	Shares	Amount	Paid-In Capital	Treasury Stock	Retained Earnings	Accumulated Other Comprehensive Loss	Noncontrolling Interests	Total
Net income	—	$ —	$ —	$ —	$ 269.5	$ —	$ 15.2	$ 284.7
Other comprehensive income (loss)	—	—	—	—	—	0.9	(2.3)	(1.4)
Distributions to noncontrolling interests	—	—	—	—	—	—	(11.5)	(11.5)
Stock-based compensation	—	—	79.6	—	—	—	—	79.6
Employee share purchase plan	0.2	—	21.0	—	—	—	—	21.0
Exercise of stock options	0.1	—	0.8	—	—	—	—	0.8
Vesting of restricted stock units and performance stock units	0.9	—	—	—	—	—	—	—
Treasury stock purchased	(0.3)	—	—	(32.5)	—	—	—	(32.5)
Dividends to shareholders	—	—	—	—	(77.5)	—	—	(77.5)
Balance, December 31, 2022	192.7	$ 2.0	$ 2,290.3	$ (284.5)	$ 2,446.6	$ (284.5)	$ 99.5	$ 4,269.4

See accompanying notes to consolidated financial statements.

TRANSUNION AND SUBSIDIARIES
Notes to Consolidated Financial Statements
Years Ended December 31, 2022, 2021 and 2020

1. Significant Accounting and Reporting Policies

Description of Business

TransUnion is a leading global information and insights company that makes trust possible between businesses and consumers, working to help people around the world access opportunities that can lead to a higher quality of life. That trust is built on TransUnion's ability to deliver safe, innovative solutions with credibility and consistency. We call this Information for Good.

Grounded in our heritage as a credit reporting agency, we have built robust and accurate databases of information for a large portion of the adult population in the markets we serve. We use our data fusion methodology to link and match an increasing set of disparate data to further enrich our database. We use this enriched data, combined with our expertise, to continuously develop more insightful solutions for our customers, all in accordance with global laws and regulations. Because of our work, organizations can better understand consumers in order to make more informed decisions, and earn consumer trust through great, personalized experiences, and the proactive extension of the right opportunities, tools and offers. In turn, we believe consumers can be confident that their data identities will result in better offers and opportunities.

We provide solutions that enable businesses to manage and measure credit risk, market to new and existing customers, verify consumer identities, mitigate fraud, and effectively manage call center operations. Businesses embed our solutions into their process workflows to deliver critical insights and enable effective actions. Consumers use our solutions to view their credit profiles and access analytical tools that help them understand and manage their personal financial information and take precautions against identity theft. Our solutions are based on a foundation of data assets across financial, credit, alternative credit, identity, phone activity, digital device information, marketing, bankruptcy, lien, judgment, insurance claims, automotive and other relevant information obtained from thousands of sources including financial institutions, private databases and public records repositories.

Our addressable market includes the global data and analytics market, which continues to grow as companies around the world increasingly recognize the benefits of data and analytics-based decision making, and as consumers recognize the important role that their data identities play in their ability to procure goods and services. We leverage our differentiated capabilities in order to serve a global customer base across multiple geographies and industry verticals.

Basis of Presentation

The accompanying consolidated financial statements of TransUnion and subsidiaries have been prepared in accordance with U.S. generally accepted accounting principles ("GAAP"). Our consolidated financial statements reflect all adjustments which, in the opinion of management, are necessary for a fair presentation of the periods presented. All significant intercompany transactions and balances have been eliminated. As a result of displaying amounts in millions, rounding differences may exist in the financial statements and footnote tables. We have recast certain items, including the prior year's revenue disaggregation disclosures in Note 20, "Reportable Segments," to conform to the current year presentation.

Unless the context indicates otherwise, any reference in this report to the "Company," "we," "our," "us," and "its" refers to TransUnion and its consolidated subsidiaries, collectively.

For the periods presented, TransUnion does not have any material assets, liabilities, revenues, expenses or operations of any kind other than its ownership investment in TransUnion Intermediate Holdings. Inc.

Principles of Consolidation

The consolidated financial statements of TransUnion include the accounts of TransUnion and all of its controlled subsidiaries. Investments in nonmarketable unconsolidated entities in which the Company is able to exercise significant influence are accounted for using the equity method. Investments in nonmarketable unconsolidated entities in which the Company is not able to exercise significant influence, our "Cost Method Investments," are accounted for at our initial cost, minus 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.

Use of Estimates

The preparation of consolidated financial statements and related disclosures in accordance with GAAP requires management to make estimates and judgments that affect the amounts reported. We believe that the estimates used in preparation of the accompanying consolidated financial statements are reasonable, based upon information available to management at this time. These estimates and judgments affect the reported amounts of assets, liabilities and disclosure of contingent assets and liabilities at the balance sheet date, as well as the amounts of revenue and expense during the reporting period. Estimates are inherently uncertain and actual results could differ materially from the estimated amounts.

Impact of COVID-19 on Our Financial Statements

During 2020, the economic effect of the COVID-19 pandemic had a material and adverse impact on numerous aspects of our business, including customer demand for our services and solutions in all of our segments.

Segments

Operating segments are businesses for which separate financial information is available and evaluated regularly by our chief operating decision maker ("CODM") deciding how to allocate resources and assess performance. We have three operating and reportable segments; U.S. Markets, International and Consumer Interactive. We also report expenses for Corporate, which provides support services to each segment. Details of our segment results are discussed in Note 20, "Reportable Segments."

Revenue Recognition and Deferred Revenue

All of our revenue is derived from contracts with our customers and is reported as revenue in the Consolidated Statements of Income generally as or at the point in time our performance obligations are satisfied. A performance obligation is a promise in a contract to transfer a distinct good or service to a customer. We have contracts with two general groups of performance obligations; those that require us to stand ready to provide goods and services to a customer to use as and when requested ("Stand Ready Performance Obligations") and those that do not require us to stand ready ("Other Performance Obligations"). Our Stand Ready Performance Obligations include obligations to stand ready to provide data, process transactions, access our databases, software-as-a-service and direct-to-consumer products, rights to use our intellectual property and other services. Our Other Performance Obligations include the sale of certain batch data sets and various professional and other services.

Deferred revenue generally consists of amounts billed in excess of revenue recognized for the sale of data services, subscriptions and set up fees. The current and long-term portions of deferred revenue are included in other current liabilities and other liabilities.

See Note 15, "Revenue," for a further discussion about our revenue recognition policies.

Costs of Services

Costs of services include data acquisition and royalty fees, personnel costs related to our databases and software applications, consumer and call center support costs, hardware and software maintenance costs, telecommunication expenses and occupancy costs associated with the facilities where these functions are performed.

Selling, General and Administrative Expenses

Selling, general and administrative expenses include personnel-related costs for sales, administrative and management employees, costs for professional and consulting services, advertising and occupancy and facilities expense of these functions. Advertising costs, are expensed as incurred. Advertising costs, which include commissions we pay to our partners to promote our products online, for the years ended December 31, 2022, 2021 and 2020 were $87.7 million, $92.9 million and $89.8 million, respectively.

Stock-Based Compensation

Compensation expense for all stock-based compensation awards is determined using the grant date fair value. For all equity-based plan, we record the impact of forfeitures when they happen. Expense is recognized on a straight-line basis over the requisite service period of the award, which is generally equal to the vesting period. The details of our stock-based compensation program are discussed in Note 18, "Stock-Based Compensation."

Income Taxes

Deferred income tax assets and liabilities are determined based on the estimated future tax effects of temporary differences between the financial statement and tax basis of assets and liabilities, as measured by current enacted tax rates. The effect of a tax rate change on deferred tax assets and liabilities is recognized in operations in the period that includes the enactment date of the change. We periodically assess the recoverability of our deferred tax assets, and a valuation allowance is recorded against deferred tax assets if it is more likely than not that some portion of the deferred tax assets will not be realized. See Note 17, "Income Taxes," for additional information.

Foreign Currency Translation

The functional currency for each of our foreign subsidiaries is generally that subsidiary's local currency. We translate the assets and liabilities of foreign subsidiaries at the year-end exchange rate, and translate revenues and expenses at the monthly average rates during the year. We record the resulting translation adjustment as a component of other comprehensive income in stockholders' equity.

Transaction gains and losses that arise from exchange rate fluctuations on transactions denominated in a currency other than the functional currency of an entity are included in the results of operations as incurred. The exchange rate losses for the years ended December 31, 2022, 2021 and 2020 were not material.

Cash and Cash Equivalents

We consider investments in highly liquid debt instruments with original maturities of three months or less to be cash equivalents. The carrying value of our cash and cash equivalents approximate their fair value.

Trade Accounts Receivable

We base our allowance for doubtful accounts estimate on our historical loss experience, our current expectations of future losses, current economic conditions, an analysis of the aging of outstanding receivables and customer payment patterns, and specific reserves for customers in adverse financial condition or for existing contractual disputes.

The following is a roll-forward of the allowance for doubtful accounts for the periods presented:

	Twelve months ended December 31,		
	2022	2021	2020
Beginning Balance	$ 10.7	$ 17.1	$ 13.4
Provision for losses on trade accounts receivable	5.9	(2.6)	9.8
Write-offs, net of recovered accounts	(5.6)	(3.8)	(6.1)
Ending balance	$ 11.0	$ 10.7	$ 17.1

Long-Lived Assets

Property, Plant, Equipment and Intangibles

Property, plant and equipment is depreciated primarily using the straight-line method, over the estimated useful lives of the assets. Buildings and building improvements are generally depreciated over 20 years. Computer equipment and purchased software are depreciated over 3 to 7 years. Leasehold improvements are depreciated over the shorter of the estimated useful life of the asset or the lease term. Other assets are depreciated over 5 to 7 years. Intangibles, other than indefinite-lived intangibles, are amortized using the straight-line method, which approximates the pattern of usage, over their economic life, generally 3 to 40 years. Assets to be disposed of, if any, are separately presented in the consolidated balance sheet and reported at the lower of the carrying amount or fair value, less costs to sell, and are no longer depreciated. See Note 5, "Property, Plant and Equipment," and Note 7, "Intangible Assets," for additional information about these assets.

Internal Use Software

We monitor the activities of each of our internal use software and system development projects and analyze the associated costs, making an appropriate distinction between costs to be expensed and costs to be capitalized. Costs incurred during the preliminary project stage are expensed as incurred. Many of the costs incurred during the application development stage are capitalized, including costs of software design and configuration, development of interfaces, coding, testing and installation of the software. Once the software is ready for its intended use, it is amortized on a straight-line basis over its useful life, generally 3 to 10 years.

Impairment of Long-Lived Assets

We review long-lived asset groups that are subject to amortization for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset group may not be recoverable. Recoverability of asset groups to be held and used is measured by a comparison of the carrying amount of an asset group to the estimated undiscounted future cash flows expected to be generated by the asset group. If the carrying amount of an asset group exceeds its estimated future cash flows, an impairment charge is recognized equal to the amount by which the carrying amount of the asset group exceeds the fair value of the asset group. There were no significant impairment charges recorded during 2022, 2021 and 2020.

Marketable Securities

We classify our investments in debt and equity securities in accordance with our intent and ability to hold the investments. Held-to-maturity securities are carried at amortized cost, which approximates fair value, and are classified as either short-term or long-term investments based on the contractual maturity date. Earnings from these securities are reported as a component of interest income. Available-for-sale securities if any, are carried at fair market value, with the unrealized gains and losses, net of tax, included in accumulated other comprehensive income.

At December 31, 2022 and 2021, the Company's marketable securities consisted of available-for-sale securities. The available-for-sale securities relate to foreign exchange-traded corporate bonds. There were no significant realized or unrealized gains or losses for these securities for any of the periods presented. We follow fair value guidance to measure the fair value of our financial assets as further described in Note 19, "Fair Value".

We periodically review our marketable securities to determine if there is an other-than-temporary impairment on any security. If it is determined that an other-than-temporary decline in value exists, we write down the investment to its market value and record the related impairment loss in other income. There were no other-than-temporary impairments of marketable securities in 2022, 2021 or 2020.

Goodwill

Goodwill is allocated to our reporting units, which are an operating segment or one level below an operating segment. We have no indefinite-lived intangible assets other than goodwill. We conduct an impairment test in the fourth quarter of each year, or more frequently if events or circumstances indicate that the carrying value of goodwill may be impaired.

We have the option to first perform a qualitative analysis to determine if it is more likely than not that the fair value of a reporting unit is less than its carrying value. If the qualitative analysis indicates that an impairment is more likely than not for any reporting unit, we perform a quantitative impairment test for that reporting unit. We have the option to bypass the qualitative analysis for any reporting unit and proceed directly to performing a quantitative impairment test.

When we perform a quantitative impairment test, we use a combination of an income approach, using the discounted cash flow method, and a market approach, using the guideline public company method, to determine the fair value of each reporting unit. For each reporting unit, we compare the fair value to its carrying value including goodwill. If the fair value of the reporting unit is less than its carrying value, we record an impairment charge based on that difference, up to the amount of goodwill recorded in that reporting unit.

The quantitative impairment test requires the application of a number of significant assumptions, including estimates of future revenue growth rates, EBITDA margins, discount rates, and market multiples. The projected future revenue growth rates and EBITDA margins, and the resulting projected cash flows of each reporting unit are based on historical experience and internal operating plans reviewed by management, extrapolated over the forecast period. Discount rates are determined using a weighted average cost of capital adjusted for risk factors specific to each reporting unit. Market multiples are based on the guideline public company method using comparable publicly traded company multiples of EBITDA for a group of benchmark companies.

See Note 6, "Goodwill," for additional information about our 2022 impairment analysis.

Benefit Plans

We maintain a 401(k) defined-contribution profit sharing plan for eligible employees. We provide a partial matching contribution and a discretionary contribution based on a fixed percentage of a participant's eligible compensation. Contributions to this plan for the years ended December 31, 2022, 2021 and 2020 were $32.9 million, $34.5 million and $27.2 million, respectively.

Recently Adopted Accounting Pronouncements

There are no recent accounting pronouncements that have been adopted by TransUnion in 2022.

Recent Accounting Pronouncements Not Yet Adopted

There are no pending recent accounting pronouncements that apply to TransUnion that have not been adopted.

2. Business Acquisitions

The following transactions were accounted for as business combinations under the acquisition method of accounting. The acquisition method requires, among other things, that assets acquired and liabilities assumed in a business combination generally be recognized at their fair values as of the acquisition date. The determination of fair value requires management to make significant estimates and assumptions. The excess of the purchase price over the fair value of the acquired net assets has been recorded as goodwill. The results of operations of these acquisitions are included in our consolidated financial statements from the respective dates of acquisition.

2022 Acquisitions

Verisk Financial Services

On April 8, 2022, we completed our acquisition of Verisk Financial Services ("VF"), the financial services business unit of Verisk Analytics, Inc. ("Verisk"). We acquired 100% of the outstanding equity interest of the entities that comprise VF for $505.7 million in cash, including a decrease of $2.3 million recorded subsequent to the acquisition date for certain customary purchase price adjustments. We have retained the leading core businesses of Argus Information and Advisory Services, Inc. and Commerce Signals, Inc. (collectively, "Argus"), and identified several non-core businesses that we classified as held-for-sale as of the acquisition date that we have subsequently divested. See Note 3, "Discontinued Operations," for a further discussion.

Argus is relied upon by leading financial institutions, payments providers, and retailers worldwide for competitive studies, predictive analytics, models, and advisory services to provide a clear perspective on where their business stands today and to best position them for success in the future. We leverage the data provider consortium and proprietary and differentiated benchmarking datasets of these entities to provide more enhanced and holistic solution capabilities to our customers to make better and faster decisions that will help them increase financial inclusion, acquire new accounts, and improve fraud prevention, risk management, and other solutions.

We engaged in business activities with VF prior to the acquisition that were not material. The results of operations of Argus subsequent to the acquisition date are included in the U.S. Markets segment, including revenue of $71.5 million and net income of $2.8 million in 2022. The pro forma effects of this acquisition are not significant to the Company's reported financial results for any period presented. Accordingly, no pro forma financial statements have been presented herein.

Acquisition Costs

We recognized transaction costs related to the acquisition of $11.7 million for twelve months ended December 31, 2022, which we have recorded within other income and expense, net.

Purchase Price Allocation

The purchase price for this acquisition has been finalized. As of December 31, 2022, the valuation of the assets acquired and liabilities assumed is substantially complete, and we expect to complete this analysis within one year from the acquisition date.

The fair values assigned to assets acquired and liabilities assumed as of December 31, 2022, are based on management's best estimates and assumptions as of the reporting date. The acquired assets and assumed liabilities, including the preliminary allocation of goodwill and intangible assets, are included in the U.S. Markets segment.

The table below summarizes the preliminary allocation of fair value of assets acquired and liabilities assumed as of April 8, 2022, the date of acquisition, inclusive of measurement period adjustments:

(in millions)	April 8, 2022 VF
Purchase price[1]:	$ 505.7
Assets acquired:	
Cash and cash equivalents	$ 4.1
Trade accounts receivable	26.0
Other current assets	3.3
Current assets of discontinued operations	16.5
Right of use lease assets	6.6
Property, plant and equipment	2.1
Goodwill[1,2]	167.5
Other intangibles[1]	195.0
Other assets	29.0
Other assets of discontinued operations	126.9
Total assets acquired	$ 577.0
Liabilities assumed:	
Trade accounts payable	$ 4.0
Other current liabilities	7.6
Current liabilities of discontinued operations	7.8
Deferred revenue	4.6
Lease liabilities	6.5
Deferred taxes[1]	40.2
Other liabilities	0.1
Other liabilities of discontinued operations	0.6
Total liabilities assumed	$ 71.4
Net assets acquired	$ 505.7

1. Since the date of acquisition, we decreased the purchase price for VF by $2.3 million to reflect the final purchase price adjustments. Additionally, we recorded other measurement period adjustments impacting intangibles, goodwill, and deferred taxes. The impact of these adjustments resulted in a decrease to other intangibles of $25.0 million, an increase to goodwill of $18.3 million, a decrease in deferred taxes of $4.5 million and other insignificant changes.
2. We estimate that $46.8 million of the goodwill, which originated from previous acquisitions of VF, is tax deductible.

2021 Acquisitions

Neustar

On December 1, 2021, we completed the acquisition of Neustar, Inc. (“Neustar”). We acquired 100% of the equity of Neustar for $3,100.1 million in cash, including final purchase price adjustments as set forth in the purchase agreement. The acquisition was funded primarily with the proceeds from the issuance of our Incremental Term B-6 Loan, which closed concurrently with the closing of the transaction. See Note 10, “Debt,” for additional information about our Incremental Term B-6 Loan. There was no contingent consideration resulting from this transaction.

Neustar, a premier identity resolution company with leading solutions in Marketing, Risk and Communications, enables customers to build connected consumer experiences by combining decision analytics with real-time identity resolution services driven by its OneID platform. The acquisition of Neustar provides immediate scale to our identity resolution services through Neustar’s large, well-established customer base, accelerates the future growth of our identity-based solutions and expands our powerful digital identity capabilities through the addition of distinctive data and analytics, enabling consumers and businesses to transact online with greater confidence.

We engaged in business activities with Neustar prior to the acquisition that were not material. The results of operations of Neustar subsequent to the acquisition date and the acquired assets and assumed liabilities are included in the U.S. Markets segment.

Sontiq

On December 1, 2021, we completed the acquisition of Sontiq, Inc. ("Sontiq"). We acquired 100% of the equity of Sontiq for $642.6 million in cash, including final purchase price adjustments as set forth in the purchase agreement. The acquisition was funded primarily with the proceeds from the issuance of our Second Lien Term Loan, which closed concurrently with the closing of the transaction. The Second Lien Term Loan was repaid in full prior to December 31, 2021.

Sontiq provides solutions including identity monitoring, restoration, and response products and services to help empower consumers and businesses to proactively protect against identity theft and cyber threats. The acquisition of Sontiq provides access to an attractive new base of customers and consumers through a highly recurring subscription-based revenue model and also complements and expands our Consumer Interactive solutions portfolio by providing valuable identity protection services for consumers. Sontiq's identity security monitoring products incorporate our credit data, are highly complementary to our capabilities and are expected to significantly increase our opportunities for growth.

The results of operations of Sontiq subsequent to the acquisition date are included within the Consumer Interactive segment, and together with the acquired assets and assumed liabilities, including the allocation of goodwill and intangible assets, are included in the Consumer Interactive segment. The pro forma effects of this acquisition are not significant to the Company's reported financial results for any period presented. Accordingly, no pro forma financial statements have been presented herein.

Purchase Price Allocations

The purchase price and valuations of the assets acquired and liabilities assumed for the Neustar and Sontiq acquisitions have been finalized as of December 31, 2022. The table below summarizes the allocation of fair value of assets acquired and liabilities assumed, inclusive of measurement period adjustments:

	December 1, 2021		
(in millions)	Neustar	Sontiq	Total
Purchase price[1]:	$ 3,100.1	$ 642.6	$ 3,742.7
Assets acquired:			
Cash and cash equivalents	$ 122.7	$ 17.8	$ 140.4
Trade accounts receivable	118.7	10.0	128.7
Other current assets	24.6	1.6	26.2
Right of use lease assets	83.2	2.4	85.6
Property, plant and equipment[1]	42.1	1.8	43.9
Goodwill[1,2]	1,882.2	437.8	2,320.0
Other intangibles	1,510.0	237.2	1,747.2
Other assets	5.4	0.2	5.6
Total assets acquired	$ 3,788.9	$ 708.7	$ 4,497.6
Liabilities assumed:			
Accounts payable	$ 29.1	$ 7.3	$ 36.4
Other current liabilities	154.7	4.8	159.6
Deferred revenue	49.3	19.1	68.5
Operating lease liabilities	87.8	2.4	90.1
Other liabilities	13.4	0.1	13.5
Deferred tax liabilities[1]	354.4	32.4	386.8
Total liabilities assumed	$ 688.8	$ 66.1	$ 754.9
Net assets acquired:	$ 3,100.1	$ 642.6	$ 3,742.7

1. During the twelve months ended December 31, 2022, the purchase price for Neustar was reduced by $6.5 million to reflect the final purchase price adjustments. Measurement period adjustments for Neustar included a decrease to

goodwill of $18.1 million, a decrease in deferred tax liabilities of $10.7 million, and other insignificant changes. Purchase price adjustments for Sontiq were insignificant for the twelve months ended December 31, 2022. Measurement period adjustments in 2022 for Sontiq included a $7.9 million decrease in Goodwill, a $3.4 million decrease in property, plant and equipment, and a $11.8 million decrease in deferred income tax liabilities, and other insignificant changes.

2. For tax purposes, we estimate that $285.9 million of the goodwill, which originated from previous acquisitions of Neustar and Sontiq, is tax deductible.

Identifiable Intangible Assets and Goodwill

Identifiable Intangible Assets

The following table sets forth the components of identifiable intangible assets acquired and the weighted average amortization period as of the acquisition date:

	April 8, 2022		December 1, 2021			
	Argus[1]		Neustar[1]		Sontiq[1]	
(dollars in millions)	Preliminary Fair Value	Weighted-Average Amortization Period	Fair Value	Weighted-Average Amortization Period	Fair Value	Weighted-Average Amortization Period
Customer related assets	$ 171.0	18 years	$ 1,180.0	18 years	$ 183.3	17 years
Technology and software	22.0	7 years	320.0	10 years	49.7	10 years
Trade names and trademarks	2.0	1 year	10.0	1 year	1.5	1 year
Non-compete agreements	—	0	—	0	2.7	2 years
Total identifiable intangible assets	$ 195.0	16 years	$ 1,510.0	16 years	$ 237.2	15 years

(1) As of December 31, 2022, the valuation of intangible assets is substantially complete for Argus, and final for Neustar and Sontiq.

In determining the fair value of the identifiable intangible assets, we utilized various forms of the income approach, depending on the asset being valued. The estimation of fair value requires significant judgment related to cash flow forecasts, discount rates reflecting the risk inherent in each cash flow stream, competitive trends, market comparables and other factors. Other inputs included historical data, current and anticipated market conditions, and growth rates.

The intangible assets were valued using the following valuation approaches:

Customer Relationships

For each acquisition, a customer related asset was deemed to be the primary asset, which we valued using the multi-period excess-earnings method, a form of the income approach, which required the application of judgment for significant assumptions. Significant assumptions include customer attrition rates, EBITDA margins, and discount rates.

For Argus, we also identified another customer related asset that met the criteria to be recognized separately from the primary asset, which we valued using the lost income method, a form of the income approach, which required the application of judgment for significant assumptions. Significant assumptions include the expected length of time to recreate the customer relationships, EBITDA margins, and discount rates.

Technology and software

We valued the developed technology using the relief-from-royalty method, a form of the income approach, which required the application of judgment for significant assumptions. Significant assumptions include the royalty rate, economic depreciation factors, and discount rates.

Other identifiable intangible assets

Other identifiable intangible assets include trade names and trademarks and non-compete agreements for key employees, which are not material. Trade names and trademarks were valued using the relief from royalty method, and non-compete agreements were valued using the lost income method.

Goodwill

We recorded the excess of the purchase price over the fair value of the net tangible and identifiable intangible assets acquired and liabilities assumed as goodwill. The purchase price of each acquisition exceeded the fair value of the net assets acquired due primarily to expected future revenue growth opportunities, synergies, operating efficiencies, and the assembled workforce. The acquisition of Argus provides proprietary competitive portfolio performance insights sourced from a consortium of financial institutions that, when combined with TransUnion's authoritative datasets, is expected to allow us to better serve our customers by providing enhanced insights and solutions. The acquisition of Neustar is expected to accelerate growth through both material revenue synergies and increased participation in the fast-growing digital marketing and identity verification marketplaces. The acquisition of Sontiq is expected to result in a more comprehensive set of offerings which are expected to significantly increase growth opportunities for the Company.

Unaudited pro-forma financial information

The supplemental pro-forma financial information has been prepared using the acquisition method of accounting and is based on the historical financial information of TransUnion and Neustar, assuming the transaction occurred on January 1, 2020. The pro-forma revenues and results of operations of Sontiq and Argus are not included because the impact on our consolidated financial statements is immaterial. The supplemental pro-forma financial information does not necessarily represent what the combined companies' revenue or results of operations would have been had the acquisition of Neustar been completed on January 1, 2020, nor is it intended to be a projection of future operating results of the combined company. It also does not reflect any operating efficiencies or potential cost savings that might be achieved from synergies of combining TransUnion and Neustar.

The unaudited supplemental pro-forma financial information has been calculated after applying TransUnion's accounting policies and adjusting the results of the combined company to reflect incremental amortization expense resulting from the fair value adjustments for acquired intangible assets as well as the net decrease to interest expense resulting from the elimination of the historical interest expense on Neustar debt that was paid off at closing partially offset by incremental interest expense resulting from the external debt borrowed by TransUnion to fund the acquisition, and the corresponding income tax impact of these adjustments.

Also, during the year ended December 31, 2021, TransUnion and Neustar incurred $29.7 million and $88.2 million of acquisition-related costs, respectively. These expenses are reflected in pro-forma net income from continuing operations attributable to TransUnion for the year ended December 31, 2020, in the table below and the acquisition related expenses incurred by TransUnion are included in other income (expense), net, in our consolidated statement of income for the year ended December 31, 2021.

There are no other material non-recurring pro-forma adjustments directly attributable to the Neustar acquisition included in the reported pro-forma revenue and pro-forma net income.

	(Unaudited) TransUnion and Neustar combined For the Year Ended	
(in millions)	December 31, 2021	December 31, 2020
Pro-forma revenue	$ 3,493.2	$ 3,064.5
Pro-forma net income from continuing operations attributable to TransUnion	$ 247.6	$ 72.9

2020 Acquisitions

During 2020, we acquired 100% of the equity of Tru Optik Data Corp ("Tru Optik") and Signal Digital, Inc. ("Signal"). The results of operations of Tru Optik and Signal, which are not material to our consolidated financial statements, have been included as part of our U.S. Markets reportable segment in our consolidated statements of income since the date of each of the acquisitions. During 2021, we finalized the purchase accounting for Tru Optik and Signal, with no material changes to our previous estimates.

3. Discontinued Operations

Non-core businesses from the VF acquisition

As discussed in Note 2, "Business Acquisitions," on April 8, 2022, we completed the acquisition of VF, which included Argus and several non-core businesses that we classified as held-for-sale as of the acquisition date. We classified the results of operations of the non-core businesses as discontinued operations, net of tax, in the consolidated statements of income for the year ended December 31, 2022. In the fourth quarter, we classified additional assets of Argus as held-for-sale. On December

30, 2022, we divested the non-core businesses, including the assets we classified as held-for-sale in the fourth quarter. As we sold these businesses on December 30, 2022, there are no assets or liabilities of these businesses on our consolidated balance sheet as of December 31, 2022.

We received total proceeds of $173.9 million, consisting of $103.6 million in cash, and a note receivable with a face value of $72.0 million and a fair value of $70.3 million. The purchase price is subject to certain customary adjustments. We recognized a $7.5 million gain on the sale of these businesses, which is included in discontinued operations, net of tax.

Healthcare business

On December 17, 2021, we completed the sale of our Healthcare business for total consideration of $1,706.4 million in cash, including a $0.5 million true-up to our estimate of net working capital recorded in the twelve months ended December 31, 2022. The after-tax net proceeds were approximately $1.4 billion. The terms and conditions of the transaction are set forth in the Stock Purchase Agreement dated as of October 26, 2021, by and between Trans Union LLC and nThrive, Inc. ("nThrive"). We also entered into a transition services agreement ("TSA") that requires Trans Union LLC to provide certain administrative and operational services to nThrive on a transitional basis for generally up to 24 months. This agreement is not material and does not confer upon us the ability to influence the operating or financial policies of nThrive subsequent to the closing date. Income generated from the services provided under the TSA has been recorded in other income and (expense), net in the consolidated statements of income.

As the transaction closed on December 17, 2021, there are no assets or liabilities of the Healthcare business on our consolidated balance sheet as of December 31, 2022 and December 31, 2021. We classified the results of operations of our Healthcare business as discontinued operations, net of tax, in our consolidated statements of income. We recognized gains on the sale of our Healthcare business within discontinued operations, net of tax, of $0.5 million and $982.5 million, in the consolidated statements of income for the twelve months ended December 31, 2022 and 2021, respectively, with respect to this sale.

Discontinued operations, net of tax

Discontinued operations, net of tax, for the twelve months ended December 31, 2022 as reflect in the table below is related to the non-core businesses of our VF acquisition, as well as an incremental gain on sale of discontinued operations resulting from the final net working capital adjustment related to our Healthcare business. The results reflected for the twelve months ended December 31, 2021 and December 31, 2020, are exclusively attributed to the Healthcare business that we disposed of in December 2021:

	Twelve Months Ended December 31,		
(in millions)	2022	2021	2020
Revenue	$ 36.7	$ 184.8	$ 185.9
Operating expenses			
Cost of services (exclusive of depreciation and amortization below)	11.7	65.6	66.5
Selling, general and administrative	14.9	39.1	30.6
Depreciation and amortization	—	16.5	21.1
Total operating expenses	26.6	121.2	118.2
Operating income of discontinued operations	10.1	63.6	67.7
Non-operating income and (expense)	(0.5)	1.9	(1.4)
Income before income taxes from discontinued operations	9.6	65.5	66.3
Provision for income taxes	(0.1)	(16.3)	(16.5)
Gain on sale of discontinued operations, net of tax	8.0	982.5	—
Discontinued operations, net of tax	$ 17.4	$ 1,031.7	$ 49.8

4. Other Current Assets

Other current assets consisted of the following:

(in millions)	December 31, 2022	December 31, 2021
Prepaid expenses	$ 145.1	$ 136.2
Contract assets (Note 15)	11.4	5.2
Marketable securities (Note 19)	2.6	3.1
Other	103.6	87.1
Total other current assets	$ 262.7	$ 231.6

Other includes other investments in non-negotiable certificates of deposit that are recorded at their carrying value which approximates fair value.

5. Property, Plant and Equipment

Property, plant and equipment, including those acquired by finance lease, consisted of the following:

(in millions)	December 31, 2022	December 31, 2021
Computer equipment and furniture	$ 555.7	$ 511.8
Purchased software	227.6	218.3
Building and building improvements	143.1	139.9
Land	3.2	3.2
Total cost of property, plant and equipment	929.6	873.1
Less: accumulated depreciation	(711.3)	(625.4)
Total property, plant and equipment, net of accumulated depreciation	$ 218.2	$ 247.7

Depreciation expense, including depreciation of assets recorded under finance leases, for the years ended December 31, 2022, 2021 and 2020, was $105.9 million, $98.8 million and $94.0 million, respectively.

6. Goodwill

Our reporting units consist of U.S. Markets, Consumer Interactive, and the geographic regions of the United Kingdom, Africa, Canada, Latin America, India, and Asia Pacific within our International reportable segment.

We perform our annual goodwill impairment tests as of October 31. In 2022, 2021 and 2020 we elected to bypass the qualitative goodwill impairment analysis, and instead performed a quantitative goodwill impairment test for all reporting units. We compared the fair value of each reporting unit to its carrying value including goodwill. For each of our reporting units, the fair value exceeded the carrying value and no impairment loss was recorded. For our United Kingdom reporting unit, we had $681.2 million of goodwill as of December 31, 2022. The calculated excess fair value over carrying value was less than 10% of its carrying value as of October 31, 2022, our annual assessment date. Therefore, we concluded no impairment existed for this reporting unit. As of December 31, 2022, there was no accumulated goodwill impairment loss for any reporting unit.

Goodwill allocated to our reportable segments as of December 31, 2022, and 2021, and the changes in the carrying amount of goodwill during the periods, consisted of the following:

(in millions)	U.S. Markets	International	Consumer Interactive	Total
Balance, December 31, 2020	$ 1,562.3	$ 1,423.1	$ 241.2	$ 3,226.6
2021 Acquisitions	1,900.2	—	445.8	2,346.0
Purchase accounting measurement period adjustments	(7.9)	—	—	(7.9)
Foreign exchange rate adjustment	—	(39.0)	—	(39.0)
Balance, December 31, 2021	$ 3,454.6	$ 1,384.1	$ 687.0	$ 5,525.7
2022 Acquisitions	167.5	—	—	167.5
Purchase accounting measurement period adjustments	(18.1)	—	(7.9)	(26.0)
Foreign exchange rate adjustment	(1.3)	(114.5)	—	(115.8)
Balance, December 31, 2022	$ 3,602.7	$ 1,269.6	$ 679.1	$ 5,551.4

7. Intangible Assets

Intangible assets are initially recorded at their acquisition cost, or fair value if acquired as part of a business combination, and amortized over their estimated useful lives. Intangible assets consisted of the following:

	December 31, 2022			December 31, 2021		
(in millions)	Gross	Accumulated Amortization	Net	Gross	Accumulated Amortization	Net
Customer relationships	$ 2,048.6	$ (330.9)	$ 1,717.7	$ 1,918.1	$ (225.3)	$ 1,692.8
Internal use software	1,959.8	(1,029.8)	930.0	1,765.9	(874.5)	891.4
Database and credit files	1,337.7	(725.6)	612.1	1,403.3	(655.0)	748.3
Trademarks, copyrights and patents	587.7	(173.2)	414.5	581.9	(146.7)	435.2
Noncompete and other agreements	10.5	(9.1)	1.4	10.3	(7.4)	2.9
Total intangible assets	$ 5,944.1	$ (2,268.6)	$ 3,675.5	$ 5,679.5	$ (1,908.9)	$ 3,770.6

Changes in the carrying amount of intangible assets between periods consisted of the following:

(in millions)	Gross	Accumulated Amortization	Net
Balance, December 31, 2021	$ 5,679.5	$ (1,908.9)	$ 3,770.6
Business acquisitions	193.4	—	193.4
Developed internal use software	214.4	—	214.4
Amortization	—	(413.1)	(413.1)
Reclassified to assets-held-for-sale	(13.8)	—	(13.8)
Disposals	(15.9)	14.7	(1.2)
Foreign exchange rate adjustment	(113.5)	38.7	(74.8)
Balance, December 31, 2022	$ 5,944.1	$ (2,268.6)	$ 3,675.5

All amortizable intangible assets are amortized on a straight-line basis, which approximates the pattern of benefit, over their estimated useful lives. Database and credit files are generally amortized over a 12 to 15 year period. Internal use software is generally amortized over 3 to 10 year period. Customer relationships are amortized over a 10 to 20 year period. Trademarks primarily consist of the TransUnion trade name, which is being amortized over a 40 year useful life, and the remaining trademark assets are generally amortized over a shorter period based on their estimated useful life, which ranges between 1 and 20 years. Copyrights, patents, noncompete and other agreements are amortized over varying periods based on their estimated useful lives. The weighted average lives of our intangibles is approximately 15 years.

Amortization expense related to intangible assets for the years ended December 31, 2022, 2021 and 2020, was $413.1 million, $278.2 million and $252.7 million, respectively. Estimated future amortization expense related to intangible assets at December 31, 2022, is as follows:

(in millions)	Annual Amortization Expense
2023	$ 417.8
2024	390.4
2025	369.3
2026	347.4
2027	288.6
Thereafter	1,862.0
Total future amortization expense	$ 3,675.5

8. Other Assets

Other assets consisted of the following:

(in millions)	December 31, 2022	December 31, 2021
Investments in affiliated companies (Note 9)	$ 265.9	$ 240.5
Right-of-use lease assets (Note 2 and 13)	127.4	145.1
Interest rate swaps (Notes 12 and 19)	237.7	12.1
Note Receivable (Note 3 and 19)	70.3	—
Deferred Income Tax Asset (Note 17)	8.2	10.0
Other	61.5	51.3
Total other assets	$ 771.0	$ 459.0

The increase in investments in affiliated companies was due primarily to a cost method investment acquired as part of our acquisition of Argus. The increase in the interest rate swaps asset was due primarily to changes in the forward LIBOR curve during the period. Note receivable relates to the sale of our discontinued operations businesses in December 2022.

9. Investments in Affiliated Companies

Investments in affiliated companies represent our investment in non-consolidated domestic and foreign entities. These entities are in businesses similar to ours.

We use the equity method to account for investments in affiliates where we are able to exercise significant influence. For these investments, we adjust the carrying value for our proportionate share of the affiliates' earnings, losses and distributions, as well as for purchases and sales of our ownership interest.

We account for nonmarketable investments in equity securities in which we are not able to exercise significant influence, our "Cost Method Investments", at our initial cost, minus 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. For these investments, we adjust the carrying value for any purchases or sales of our ownership interests. We record any dividends received from these investments as other income in non-operating income and expense.

We have elected to account for our investment in a limited partnership, which is not material, using the net asset value fair value practical expedient. Gains and losses on this investment, which are not material, are included in other income and expense in the consolidated statements of income.

Investments in affiliated companies consisted of the following:

(in millions)	December 31, 2022	December 31, 2021
Cost Method Investments	$ 213.1	$ 192.6
Equity Method investments	49.8	46.1
Limited Partnership investment	3.0	1.8
Total investments in affiliated companies (Note 8)	$ 265.9	$ 240.5

These balances are included in other assets in the consolidated balance sheets. During 2022, we acquired a Cost Method investment as part of our VF acquisition which has a carrying value of $25.1 million as of December 31, 2022. We also recorded an impairment of $4.8 million of another Cost Method Investment. During 2021, we recorded a $12.5 million gain on a Cost Method Investment resulting from an observable price change for a similar investment of the same issuer. During 2020, we recorded a $4.8 million impairment loss of a Cost Method investment, partially offset by a $2.5 million gain on a Cost Method investment resulting from an observable price change for a similar investment of the same issuer. These gains and losses are included in other income and expense in the consolidated statements of income.

For one of these costs method investments, under the terms of the purchase agreement, there are call and put options associated with the investment that are exercisable in 2024 and 2025, subject to certain restrictions. The fair value of the call option is included in other assets on our balance sheet. The fair value of the put option is included in other liabilities on our balance sheet, and will be adjusted to fair value at each reporting date. See Note 11, “Other Liabilities,” and Note 19, “Fair Value,” for additional information about the contingent consideration and put option.

Earnings from equity method investments, which are included in other non-operating income and expense, and dividends received from equity method investments consisted of the following:

	Twelve Months Ended December 31,		
(in millions)	2022	2021	2020
Earnings from equity method investments (Note 20)	$ 13.0	$ 12.0	$ 8.9
Dividends received from equity method investments	11.6	11.0	8.2

10. Other Current Liabilities

Other current liabilities consisted of the following:

(in millions)	December 31, 2022	December 31, 2021
Accrued payroll and employee benefits	$ 208.5	$ 279.9
Accrued legal and regulatory matters (Note 22)	125.0	85.6
Deferred revenue (Note 15)	111.9	133.6
Operating lease liabilities (Note 13)	33.7	38.4
Income taxes payable (Note 3 and Note 17)	8.0	351.1
Contingent consideration (Note 19)	—	16.8
Other	53.5	66.8
Total other current liabilities	$ 540.5	$ 972.2

The decrease in accrued payroll and employee benefits is due primarily to lower accrued bonus payments in 2022 compared to 2021. The increase in accrued legal and regulatory was due primarily to an increase of our estimated liabilities for certain legal and regulatory matters. The decrease in income taxes payable was due primarily to the taxes due on the gain on the sale of our Healthcare business that were paid in 2022.

11. Other Liabilities

Other liabilities consisted of the following:

(in millions)	December 31, 2022	December 31, 2021
Operating lease liabilities (Note 13)	$ 102.0	$ 119.1
Unrecognized tax benefits, net of indirect tax effects (Note 17)	40.1	40.7
Put option (Note 9 and 19)	10.0	11.9
Deferred revenue (Note 15)	5.3	6.5
Interest rate swaps (Notes 12 and 19)	—	34.5
Other	16.5	20.2
Total other liabilities	$ 173.9	$ 232.9

The decrease in the interest rate swaps liability was due primarily to changes in the forward LIBOR curve during the period.

12. Debt

Debt outstanding consisted of the following:

(in millions)	December 31, 2022	December 31, 2021
Senior Secured Term Loan B-6, payable in quarterly installments through December 1, 2028, with periodic variable interest at LIBOR or alternate base rate, plus applicable margin (6.63% at December 31, 2022, and 2.75% at December 31, 2021), net of original issue discount and deferred financing fees of $5.3 million and $29.9 million, respectively, at December 31, 2022, and original issue discount and deferred financing fees of $7.7 million and $43.1 million, respectively, at December 31, 2021	$ 2,433.7	$ 3,049.2
Senior Secured Term Loan B-5, payable in quarterly installments through November 15, 2026, with periodic variable interest at LIBOR or alternate base rate, plus applicable margin (6.13% at December 31, 2022, and 1.85% at December 31, 2021), net of original issue discount and deferred financing fees of $2.5 million and $6.2 million, respectively, at December 31, 2022, and original issue discount and deferred financing fees of $3.2 million and $7.7 million, respectively, at December 31, 2021	2,203.3	2,227.1
Senior Secured Term Loan A-3, payable in quarterly installments through December 10, 2024, with periodic variable interest at LIBOR or alternate base rate, plus applicable margin (6.13% at December 31, 2022 and 1.35% at December 31, 2021), net of original issue discount and deferred financing fees of $1.3 million and $0.8 million, respectively, at December 31, 2022, and original issue discount and deferred financing fees of $1.9 million and $1.2 million, respectively, at December 31,2021	1,033.0	1,089.4
Finance leases	0.1	0.2
Senior Secured Revolving Credit Facility	—	—
Total debt	5,670.1	6,365.9
Less short-term debt and current portion of long-term debt	(114.6)	(114.6)
Total long-term debt	$ 5,555.5	$ 6,251.3

Excluding any potential additional principal payments which may become due on the Senior Secured Credit Facility based on excess cash flows of the prior year, scheduled future maturities of total debt at December 31, 2022, were as follows:

(in millions)	December 31, 2022
2023	$ 114.6
2024	1,034.5
2025	57.0
2026	2,165.0
2027	31.0
Thereafter	2,314.0
Unamortized original issue discounts and deferred financing fees	(46.0)
Total debt	$ 5,670.1

Senior Secured Credit Facility

On June 15, 2010, we entered into a Senior Secured Credit Facility with various lenders. This facility has been amended several times and currently consists of the Senior Secured Term Loan B-6, Senior Secured Term Loan B-5, Senior Secured Term Loan A-3 (collectively, the "Senior Secured Term Loans"), and the Senior Secured Revolving Credit Facility.

On December 1, 2021, we entered into an agreement to amend certain provisions of the Senior Secured Credit Facility and exercise our right to draw additional debt in an amount of $3,100.0 million, less original issue discount and deferred financing fees of $7.8 million and $43.6 million, respectively. Proceeds from the incremental loan on the Senior Secured Credit Facility were used to fund the acquisition of Neustar.

In addition, on December 1, 2021, we entered into a Second Lien Credit Agreement to obtain term loans (the "Second Lien Term Loan") in an aggregate amount of $640.0 million, less original issue discount and deferred financing fees of $3.2 million and $14.3 million, respectively, used to fund the acquisition of Sontiq. On December 23, 2021, we fully repaid the Second Lien Term Loan using a portion of the proceeds from our sale of the Healthcare business. As a result of the prepayment, we

expensed $3.2 million and $14.2 million, respectively, of the unamortized original issue discount and deferred fees to other income and expense in the consolidated statement of income.

During 2022 and 2021, we prepaid $600.0 million and $85.0 million, respectively, of our Senior Secured Term Loans, funded from our cash on hand. As a result of these prepayments, we expensed $9.3 million and $0.5 million, respectively, of the unamortized original issue discount and deferred fees to other income and expense in the consolidated statement of income.

Interest rates on the Senior Secured Term Loan B-6 are based on the London Interbank Offered Rate ("LIBOR") with a floor of 0.50%, unless otherwise elected, plus a margin of 2.25% or 2.00% depending on our total net leverage ratio. The Company is required to make principal payments at the end of each quarter of 0.25% of the 2021 incremental principal balance plus additional borrowings with the remaining balance due December 1, 2028.

Interest rates on the Senior Secured Term Loan B-5 are based on LIBOR, unless otherwise elected, plus a margin of 1.75%. The Company is required to make principal payments at the end of each quarter of 0.25% of the 2019 refinanced principal balance plus additional borrowings with the remaining balance due November 15, 2026.

Interest rates on Senior Secured Term Loan A-3 are based on LIBOR, unless otherwise elected, plus a margin of 1.25%, 1.50% or 1.75% depending on our total net leverage ratio. The Company is required to make principal payments of 0.625%, of the 2019 refinanced principal balance plus additional borrowings, at the end of each quarter through December 2021, increasing to 1.25% each quarter thereafter, with the remaining balance due December 10, 2024.

Interest rates on the Senior Secured Revolving Credit Facility are based on LIBOR, unless otherwise elected, plus a margin of 1.25%, 1.50% or 1.75% depending on our total net leverage ratio. There is a 0.20%, 0.25% or 0.30% annual commitment fee, depending on our total net leverage ratio, payable quarterly based on the undrawn portion of the Senior Secured Revolving Credit Facility. The commitment under the Senior Secured Revolving Line of Credit expires on December 10, 2024.

Interest rates on the Second Lien Term Loan were based on LIBOR, unless otherwise elected, plus a margin of 5.00%. The Company was required to repay the principal balance plus interest due December 1, 2029, however, the loan was repaid in full on December 23, 2021.

The Company may be required to make additional payments based on excess cash flows of the prior year, as defined in the agreement. Depending on the senior secured net leverage ratio for the year, a principal payment of between zero and fifty percent of the excess cash flows will be due the following year. There is no required excess cash flow payment due for 2022. Additional payments based on excess cash flows could be due in future years.

As of December 31, 2022, we had no outstanding balance under the Senior Secured Revolving Credit Facility and $0.1 million of outstanding letters of credit, and could have borrowed up to the remaining $299.9 million available.

TransUnion also has the ability to request incremental loans on the same terms under the Senior Secured Credit Facility up to the sum of the greater of $1,000.0 million and 100% of Consolidated EBITDA, minus the amount of secured indebtedness and the amount incurred prior to the incremental loan, and may incur additional incremental loans so long as the senior secured net leverage ratio does not exceed 4.25-to-1, subject to certain additional conditions and commitments by existing or new lenders to fund any additional borrowings.

With certain exceptions, the Senior Secured Credit Facility obligations are secured by a first-priority security interest in substantially all of the assets of Trans Union LLC, including its investment in subsidiaries. The Senior Secured Credit Facility contains various restrictions and nonfinancial covenants, along with a senior secured net leverage ratio test. The nonfinancial covenants include restrictions on dividends, investments, dispositions, future borrowings and other specified payments, as well as additional reporting and disclosure requirements. The senior secured net leverage test must be met as a condition to incur additional indebtedness, make certain investments, and may be required to make certain restricted payments. The senior secured net leverage ratio must not exceed 5.5-to-1 at any such measurement date. Under the terms of the Senior Secured Credit Facility, TransUnion may make dividend payments up to the greater of $100 million or 10.0% of Consolidated EBITDA per year, or an unlimited amount provided that no default or event of default exists and so long as the total net leverage ratio does not exceed 4.75-to-1. As of December 31, 2022, we were in compliance with all debt covenants.

Interest Rate Hedging

On November 16, 2022, we entered into interest rate swap agreements with various counterparties that effectively fix our LIBOR exposure on a portion of our Senior Secured Term Loan or similar replacement debt. The new swaps commenced on December 30, 2022, and expire on December 31, 2024, with a current aggregate notional amount of $1,320.0 million that amortizes each quarter. The new swaps require us to pay fixed rates varying between 4.4105% and 4.4465% in exchange for receiving a variable rate that matches the variable rate on our loans. We have designated these swap agreements as cash flow hedges.

On December 23, 2021, we entered into interest rate swap agreements with various counterparties that effectively fix our LIBOR exposure on a portion of our Senior Secured Term Loan or similar replacement debt. The new swaps commenced on December 31, 2021, and expire on December 31, 2026, with a current aggregate notional amount of $1,584.0 million that amortizes each quarter. The tranche requires us to pay fixed rates varying between 1.4280% and 1.4360% in exchange for receiving a variable rate that matches the variable rate on our loans. We have designated these swap agreements as cash flow hedges.

On March 10, 2020, we entered into two interest rate swap agreements with various counterparties that effectively fix our LIBOR exposure on a portion of our Senior Secured Term Loans or similar replacement debt. The first swap commenced on June 30, 2020, and expired on June 30, 2022. The second swap commences on June 30, 2022, and expires on June 30, 2025, with a current aggregate notional amount of $1,100.0 million that amortizes each quarter after it commences. The second swap requires us to pay fixed rates varying between 0.9125% and 0.9280% in exchange for receiving a variable rate that matches the variable rate on our loans. We have designated these swap agreements as cash flow hedges.

On December 17, 2018, we entered into interest rate swap agreements with various counterparties that effectively fixed our LIBOR exposure on a portion of our Senior Secured Term Loans or similar replacement debt at 2.702% and 2.706%. These swap agreements expired on December 30, 2022.

On December 18, 2015, we entered into interest rate cap agreements with various counterparties that effectively capped our LIBOR exposure on a portion of our Senior Secured Term Loans or similar replacement debt at 0.75% beginning June 30, 2016. These cap agreements expired on June 30, 2020, and were previously designated as cash flow hedges.

The change in the fair value of our hedging instruments, included in our assessment of hedge effectiveness, is recorded in other comprehensive income, and reclassified to interest expense when the corresponding hedged debt affects earnings.

The net change in the fair value of the swaps resulted in an unrealized gain of $260.1 million ($195.2 million, net of tax), an unrealized gain of $67.3 million ($50.5 million, net of tax), and an unrealized loss of $43.5 million ($32.7 million, net of tax) for the years ended December 31, 2022, 2021 and 2020, respectively, recorded in other comprehensive income. Interest income on the swaps in the twelve months ended December 31, 2022 was $8.3 million ($6.2 million, net of tax). Interest expense on the swaps in the twelve months ended December 31, 2021 and 2020 was $41.8 million ($31.4 million, net of tax) and $32.3 million ($23.3 million, net of tax), respectively. We expect to recognize a loss of approximately $102.4 million as interest expense due to our expectation that LIBOR will exceed the fixed rates of interest over the next twelve months.

Fair Value of Debt

As of December 31, 2022 and 2021, the fair value of our Senior Secured Term Loan B-6, excluding original issue discounts and deferred fees, was approximately $2,450.5 million and $3,096.1 million, respectively. As of December 31, 2022 and 2021, the fair value of our Senior Secured Term Loan B-5, excluding original issue discounts and deferred fees, was approximately $2,184.4 million and $2,217.0 million, respectively. As of December 31, 2022 and 2021, the fair value of our variable-rate Senior Secured Term Loan A-3, excluding original issue discounts and deferred fees was approximately $1,026.6 million and $1,076.1 million, respectively. The fair values of our variable-rate term loans are determined using Level 2 inputs, based on quoted market prices for the publicly traded instruments.

13. Leases

As a result of our acquisition of Argus, we acquired additional leases in 2022. Our lease obligations consist of operating leases for office space and data centers and a small number of finance leases for equipment. Our operating leases have remaining lease terms of up to 10.2 years. As of December 31, 2022 and 2021 the weighted-average remaining lease terms were 6.4 years and 6.6 years, respectively. We have options to extend many of our operating leases for an additional period of time and options to terminate several of our operating leases early. The lease term consists of the non-cancelable period of the lease, periods covered by options to extend the lease if we are reasonably certain to exercise the option, periods covered by an option to terminate the lease if we are reasonably certain not to exercise the option, and periods covered by an option to extend or not to terminate the lease in which the exercise of the option is controlled by the lessor.

On the commencement date of an operating lease, we record a right-of-use asset (“ROU asset”), which represents our right to use or control the use of the specified asset for the lease term, and an offsetting lease liability, which represents our obligation to make lease payments arising from the lease, based on the present value of the net fixed future lease payments due over the initial lease term. We use an estimate of the incremental borrowing rate for similarly rated debt issuers, at the inception of the lease or when the lease is assumed, as the discount rate to determine the present value of the net fixed future lease payments, except for leases where the interest rate implicit in the lease is readily determinable. As of December 31, 2022 and 2021, the weighted-average discount rate at lease inception used to calculate the present value of the fixed future lease payments were 4.2% and 4.1%, respectively.

Lease accounting guidance under Accounting Standards Codification 842 Leases ("ASC 842") requires us to expense the net fixed payments of operating leases on a straight-line basis over the lease term. ASC 842 requires us to include any built up deferred or prepaid rent balance resulting from the difference between the straight-line expense and the cash payments as a component of our ROU asset. Also included in our ROU asset is any monthly prepayment of rent. Our rent expense is typically due on the first day of each month, and we typically pay rent several weeks before it is due, so at any given month end, we will have a prepaid rent balance that is included as a component of our ROU asset.

Our operating leases principally involve office space with fixed monthly lease payments that may also contain variable non-lease components consisting of common area maintenance, operating expenses, insurance and similar costs of the space that we occupy. We have adopted the practical expedient to not separate these non-lease components from the lease components and instead account for them as a single lease component for all of our leases. This practical expedient allows us to allocate the fixed lease components and the variable non-lease components based on the contractually stated amounts, with the fixed lease components included in our ROU assets and lease liability values. The variable payments are not included within the operating lease ROU assets or lease liabilities and are expensed in the period in which they are incurred.

We have no significant short-term operating leases, finance leases, or subleases.

ROU assets are included in Other Assets, and operating lease liabilities are included in Other Current Liabilities and Other Liabilities in our Consolidated Balance Sheet. Finance lease assets are included in Property, Plant and Equipment, and finance lease liabilities are included in the Current Portion of Long-term Debt and Long-term Debt in our Consolidated Balance Sheet. See Note 8, "Other Assets," Note 10, "Other Current Liabilities," Note 11, "Other Liabilities," and Note 12, "Debt," for additional information about these items.

For the years ended December 31, 2022, 2021, 2020 our operating lease costs, including fixed, variable and short-term lease costs, were $44.5 million, $30.4 million, $33.4 million, respectively. Cash paid for operating leases are included in operating cash flows, and were $36.5 million, $30.9 million, and $34.2 million, for the years ended December 31, 2022, 2021, and 2020, respectively. Our finance lease amortization expense, interest expense, and cash paid were not significant for the reported periods.

We have elected to use the portfolio approach to assess the discount rate we use to calculate the present value of our future lease payments. Using this approach does not result in a materially different outcome compared with applying separate discount rates to each lease in our portfolio.

We have adopted an accounting policy to recognize rent expense for short-term leases, those leases with initial lease terms of twelve months or less, on a straight-line basis in our income statement.

Future fixed payments for non-cancelable operating leases and finance leases in effect as of December 31, 2022, are payable as follows:

(in millions)	Operating Leases	Finance Leases	Total
2023	$ 38.2	$ 0.1	$ 38.3
2024	29.4	—	29.4
2025	19.9	—	19.9
2026	15.6	—	15.6
2027	12.0	—	12.0
Thereafter	39.6	—	39.6
Less imputed interest	(19.0)	—	(19.0)
Totals	$ 135.7	$ 0.1	$ 135.8

14. Stockholders' Equity

The dividend rate was $0.105 per share in the third and fourth quarters of 2022, $0.095 per share per quarter from the second quarter 2021 to the second quarter 2022 and $0.075 per share per quarter from the first quarter 2020 to the first quarter 2021.

During 2022, 2021 and 2020, we paid dividends of $77.8 million, $69.8 million and $57.6 million, respectively. Dividends declared accrue to outstanding restricted stock units and are paid to employees as dividend equivalents when the restricted stock units vest.

Any determination to pay dividends in the future will be at the discretion of our board of directors and will depend on a number of factors, including our liquidity, results of operations, financial condition, contractual restrictions, restrictions imposed by applicable law and other factors our board of directors deems appropriate. We currently have capacity and intend to continue to pay a quarterly dividend, subject to approval by our board.

Treasury Stock

On February 13, 2017, our board of directors authorized the repurchase of up to $300.0 million of our common stock over the next 3 years. Our board of directors removed the three-year time limitation on February 8, 2018. To date, we have repurchased $133.5 million of our common stock and have the ability to repurchase the remaining $166.5 million.

We have no obligation to repurchase additional shares. Any determination to repurchase additional shares will be at the discretion of management and will depend on a number of factors, including our liquidity, results of operations, financial condition, contractual restrictions, restrictions imposed by applicable law, market conditions, the cost of repurchasing shares, the availability of alternative investment opportunities and other factors management deems appropriate. Any repurchased shares will have the status of treasury shares and may be used, if and when needed, for general corporate purposes.

During 2022, 2021 and 2020, 0.8 million, 1.2 million and 1.1 million outstanding employee restricted stock units vested and became taxable to the employees. Employees satisfy their payroll tax withholding obligations in a net share settlement arrangement. During 2022, 2021 and 2020 we remitted cash to the respective governmental agencies equivalent to the value of the shares employees used to satisfy their withholding obligations of $32.5 million, $36.8 million and $36.1 million, respectively.

Preferred Stock

As of December 31, 2022 and 2021, we had 100.0 million shares of preferred stock authorized and no preferred stock issued or outstanding.

15. Revenue

We have contracts with two general groups of performance obligations, Stand Ready Performance Obligations and Other Performance Obligations. Our Stand Ready Performance Obligations include obligations to stand ready to provide data, process transactions, access our databases, software-as-a-service and direct-to-consumer products, provide rights to use our intellectual property and other services. Our Other Performance Obligations include the sale of certain batch data sets and various professional and other services.

Most of our Stand Ready Performance Obligations consist of a series of distinct goods and services that are substantially the same and have the same monthly pattern of transfer to our customers. We consider each month of service in this time series to be a distinct performance obligation and, accordingly, recognize revenue over time. For a majority of these Stand Ready Performance Obligations, the total contractual price is variable because our obligation is to process an unknown quantity of transactions, as and when requested by our customers, over the contract period. We allocate the variable price to each month of service using the time-series concept and recognize revenue based on the most likely amount of consideration to which we will be entitled**,** which is generally the amount we have the right to invoice. This monthly amount can be based on the actual volume of units delivered or a guaranteed minimum, if higher. Occasionally we have contracts where the amount we will be entitled to for the transactions processed is uncertain, in which case we estimate the revenue based on what we consider to be the most likely amount of consideration we will be entitled to, and adjust any estimates as facts and circumstances evolve.

For all contracts that include a Stand Ready Performance Obligation with variable pricing, we are unable to estimate the variable price attributable to future performance obligations because the number of units to be purchased is not known. As a result, we use the exception available to forgo disclosures about revenue attributable to the future performance obligations where we recognize revenue using the time-series concept as discussed above, including those qualifying for the right to invoice practical expedient. We also use the exception available to forgo disclosures about revenue attributable to contracts with expected durations of one year or less.

Certain of our Other Performance Obligations, including certain batch data sets and certain professional and other services, are delivered at a point in time. Accordingly, we recognize revenue upon delivery, once we have satisfied that obligation. For

certain Other Performance Obligations, including certain professional and other services, we recognize revenue over time, based on an estimate of progress towards completion of that obligation. These contracts are not material.

In certain circumstances we apply the revenue recognition guidance to a portfolio of contracts with similar characteristics. We use estimates and assumptions when accounting for a portfolio that reflect the size and composition of the portfolio of contracts.

Our contracts include standard commercial payment terms generally acceptable in each region, and do not include financing with extended payment terms. We have no significant obligations for refunds, warranties, or similar obligations. Our revenue does not include taxes collected from our customers.

Accounts receivable are shown separately on our balance sheet. Contract assets and liabilities result due to the timing of revenue recognition, billings and cash collections. Contract assets include our right to payment for goods and services already transferred to a customer when the right to payment is conditional on something other than the passage of time, for example, contracts pursuant to which we recognize revenue over time but do not have a contractual right to payment until we complete the contract. Contract assets are included in our other current assets and are not material as of December 31, 2022 and 2021.

As our contracts with customers generally have a duration of one year or less, our contract liabilities consist of deferred revenue that is primarily short-term in nature. Contract liabilities include current and long-term deferred revenue that is included in other current liabilities and other liabilities. We expect to recognize the December 31, 2022, current deferred revenue balance as revenue during 2023. The majority of our long-term deferred revenue, which is not material, is expected to be recognized in less than two years.

We have certain contracts that have a duration of more than one year. For these contracts, the transaction price allocable to the future performance obligations is primarily fixed but contains a variable component. There is one material fixed fee contract with a duration of more than one year, and for this contract, we expect to recognize revenue of approximately $117.0 million over the next two years and $78.0 million thereafter.

For additional disclosures about the disaggregation of our revenue see Note 20, “Reportable Segments.”

16. Earnings Per Share

Basic earnings per share represents income available to common stockholders divided by the weighted average number of common shares outstanding during the reported period. Diluted earnings per share reflects the effect of the increase in shares outstanding determined by using the treasury stock method for awards issued under our incentive stock plans.

As of December 31, 2022, 2021, and 2020 there were less than 1.0 million anti-dilutive weighted stock-based awards outstanding. As of December 31, 2022, 2021, and 2020, there were 0.2 million, 0.1 million and 1.3 million, respectively, of contingently issuable performance-based stock awards outstanding that were excluded from the diluted earnings per share calculation because the contingencies had not been met.

Basic and diluted weighted average shares outstanding and earnings per share were as follows:

	Twelve Months Ended December 31,		
(in millions, except per share data)	2022	2021	2020
Income from continuing operations	$ 267.3	$ 370.5	$ 305.7
Less: income from continuing operations attributable to noncontrolling interests	(15.2)	(15.0)	(12.4)
Income from continuing operations attributable to TransUnion	$ 252.1	$ 355.5	$ 293.4
Discontinued operations, net of tax	17.4	1,031.7	49.8
Net income attributable to TransUnion	$ 269.5	$ 1,387.1	$ 343.2
Basic earnings per common share from:			
Income from continuing operations attributable to TransUnion	$ 1.31	$ 1.86	$ 1.54
Discontinued operations, net of tax	0.09	5.39	0.26
Net Income attributable to TransUnion	$ 1.40	$ 7.25	$ 1.81
Diluted earnings per common share from:			
Income from continuing operations attributable to TransUnion	$ 1.31	$ 1.84	$ 1.53
Discontinued operations, net of tax	0.09	5.35	0.26
Net Income attributable to TransUnion	$ 1.40	$ 7.19	$ 1.79
Weighted-average shares outstanding:			
Basic	192.5	191.4	189.9
Dilutive impact of stock based awards	0.7	1.6	2.3
Diluted	193.1	193.0	192.2

17. Income Taxes

The provision for income taxes consisted of the following:

	Twelve Months Ended December 31,		
(in millions)	2022	2021	2020
Federal			
Current	$ 102.7	$ 62.0	$ 55.9
Deferred	(55.9)	(9.3)	(8.0)
State			
Current	28.8	18.8	11.6
Deferred	(14.6)	—	(4.4)
Foreign			
Current	77.3	67.3	52.4
Deferred	(18.4)	(7.9)	(23.7)
Provision for income taxes	$ 119.9	$ 130.9	$ 83.7

The components of income before income taxes consisted of the following:

	Twelve Months Ended December 31,		
(in millions)	2022	2021	2020
Domestic	$ 155.7	$ 318.3	$ 258.5
Foreign	231.5	183.1	131.0
Income from continuing operations before income taxes	$ 387.2	$ 501.4	$ 389.5

The effective income tax rate reconciliation consisted of the following:

(in millions)	Twelve Months Ended December 31, 2022		2021		2020	
Income taxes at statutory rate	$ 81.3	21.0 %	$ 105.3	21.0 %	$ 81.8	21.0 %
Increase (decrease) resulting from:						
State taxes, net of federal benefit	8.1	2.1 %	15.5	3.1 %	8.4	2.2 %
Foreign rate differential	(4.6)	(1.2)%	(6.8)	(1.3)%	(9.4)	(2.4)%
Excess tax benefits on stock-based compensation	(5.0)	(1.3)%	(10.8)	(2.2)%	(25.3)	(6.5)%
Foreign tax law changes	(0.1)	— %	22.7	4.5 %	(0.1)	— %
Uncertain tax positions	5.7	1.5 %	4.6	0.9 %	8.3	2.1 %
Valuation allowances	18.3	4.7 %	(5.0)	(1.0)%	8.3	2.1 %
Foreign withholding taxes	9.6	2.5 %	6.5	1.3 %	5.2	1.3 %
U.S. Federal tax on foreign earnings	(1.4)	(0.4)%	(15.1)	(3.0)%	4.9	1.2 %
U.S. Federal R&D tax credit	(9.7)	(2.5)%	(6.4)	(1.3)%	(4.4)	(1.1)%
Nondeductible expenses	14.0	3.6 %	20.0	4.0 %	2.6	0.7 %
Other	3.7	1.0 %	0.4	0.1 %	3.3	0.9 %
Total	$ 119.9	31.0 %	$ 130.9	26.1 %	$ 83.7	21.5 %

For 2022, we reported a 31.0% effective tax rate, which is higher than the 21.0% U.S. federal corporate statutory rate due primarily to increases in valuation allowances on foreign tax credit carryforwards, nondeductible expenses in connection with certain legal and regulatory matters and executive compensation limitations, and other rate-impacting items, partially offset by benefits from the research and development credit and excess tax benefits on stock-based compensation.

For 2021, we reported a 26.1% effective tax rate, which is higher than the 21.0% U.S. federal corporate statutory rate due primarily to recording tax expense related to the remeasurement of our U.K. deferred taxes to reflect an increase in the U.K. corporate tax rate enacted in the second quarter 2021 and nondeductible transaction costs and penalties, partially offset by excess tax benefits on stock based compensation and a tax benefit related to electing the Global Intangible Low Tax Income ("GILTI") high-tax exclusion retroactively for the 2018 and 2019 tax years. On July 20, 2020, the U.S. Treasury issued and enacted final regulations related to GILTI that allow certain U.S. taxpayers to elect to exclude foreign income that is subject to a high effective tax rate from their GILTI inclusions. The GILTI high-tax exclusion is an annual election and is retroactively available.

For 2020, we reported a 21.5% effective tax rate, which is higher than the 21.0% U.S. federal corporate statutory rate due primarily to an increase in state taxes, valuation allowances on foreign tax credit carryforwards, and uncertain tax positions including related interest and penalties, partially offset by excess tax benefits on stock based compensation and foreign taxes in jurisdictions which have tax rates lower than the U.S. federal corporate statutory rate.

Components of net deferred income tax consisted of the following:

(in millions)	December 31, 2022	December 31, 2021
Deferred income tax assets:		
Compensation	$ 19.5	$ 16.8
Employee benefits	25.5	22.5
Legal reserves and settlements	10.7	13.2
Hedge investments	—	5.6
Loss and tax credit carryforwards	179.2	169.0
Leases	38.4	41.5
Section 174 R&D Expense	37.7	—
Other	36.7	38.4
Gross deferred income tax assets	$ 347.7	$ 307.0
Valuation allowance	(98.9)	(70.8)
Total deferred income tax assets, net	$ 248.8	$ 236.2

Deferred income tax liabilities:		
Depreciation and amortization	(874.9)	(947.5)
Right of use asset	(36.0)	(38.9)
Taxes on unremitted foreign earnings	(14.6)	(10.0)
Financing related costs	—	(0.5)
Investment in affiliated companies	(7.3)	(8.9)
Hedge investments	(59.3)	—
Other	(10.5)	(8.1)
Total deferred income tax liability	(1,002.6)	(1,013.9)
Net deferred income tax liability	$ (753.8)	$ (777.8)

Deferred tax assets and liabilities result from temporary differences between tax and accounting methods. Our balance sheet includes a deferred tax asset of $8.2 million and $10.0 million at December 31, 2022 and 2021, respectively, which is included in other assets.

If certain deferred tax assets are not likely recoverable in future years a valuation allowance is recorded. As of December 31, 2022 and 2021, a valuation allowance of $98.9 million and $70.8 million, respectively, reduced deferred tax assets related to worldwide net operating losses and tax credit carryforwards. Our estimate of the amount of the deferred tax asset we can realize requires significant assumptions about projected revenues and income that are impacted by future market and economic conditions. Our carryforwards will expire as follows: U.S. federal net operating loss carryforwards over one year to an indefinite number of years, foreign loss carryforwards over one year to an indefinite number of years, foreign tax credit carryforwards over ten years, interest expense carryforwards over an indefinite number of years, state net operating loss carryforwards over one year to an indefinite number of years and state tax credit carryforwards over one year to an indefinite number of years. As of December 31, 2022, the deferred tax assets associated with U.S. foreign tax credit carryforwards and U.S. federal net operating loss carryforwards were $63.4 million and $7.3 million, respectively. Deferred tax assets associated with foreign net operating loss carryforwards and foreign interest expense carryforwards were $28.8 million and $41.1 million, respectively. Deferred tax assets associated with U.S. federal and state interest expense carryforwards is $17.6 million. Deferred tax assets associated with other loss and tax credit carryforwards were not significant.

The total amount of gross unrecognized tax benefits as of December 31, 2022, 2021 and 2020 are $45.1 million, $45.8 million and $36.9 million, respectively. The amounts that would affect the effective tax rate if recognized are $30.5 million, $28.3 million and $18.5 million, respectively.

The total amount of gross unrecognized tax benefits consisted of the following:

(in millions)	December 31, 2022	December 31, 2021	December 31, 2020
Balance as of beginning of period	$ 45.8	$ 36.9	$ 32.8
Increase (Decrease) in tax positions due to acquisition	(0.1)	5.3	—
Increase in tax positions of prior years	0.3	5.6	6.2
Decrease in tax positions of prior years	(3.7)	(4.5)	(3.6)
Increase in tax positions of current year	3.2	2.8	1.6
Reductions relating to settlement and lapse of statute	(0.4)	(0.4)	—
Balance as of end of period	$ 45.1	$ 45.8	$ 36.9

We classify interest and penalties as income tax expense in the consolidated statements of income and their associated liabilities as other liabilities in the consolidated balance sheets. Interest and penalties on unrecognized tax benefits were $10.1 million, $7.6 million and $4.8 million, respectively, for the years ended December 31, 2022, 2021 and 2020.

We are regularly audited by federal, state and foreign taxing authorities. Given the uncertainties inherent in the audit process, it is reasonably possible that certain audits could result in a significant increase or decrease in the total amounts of unrecognized tax benefits. An estimate of the range of the increase or decrease in unrecognized tax benefits due to audit results cannot be made at this time. Tax years 2009 and forward remain open for examination in some foreign jurisdictions, 2015 and forward in some state jurisdictions, and 2012 and forward for U.S. federal purposes.

18. Stock-Based Compensation

For the years ended December 31, 2022, 2021 and 2020, we recognized stock-based compensation expense of $81.1 million, $70.1 million and $45.9 million, respectively, with related income tax benefits of approximately $13.5 million, $10.0 million and $8.4 million, respectively. Stock-based compensation expense for cash-settleable awards was a benefit of $1.7 million in 2022 and an expense of $0.9 million and $1.6 million in 2021 and 2020, respectively.

Under the TransUnion Holding Company, Inc. 2012 Management Equity Plan (the "2012 Plan"), stock-based awards could be issued to executive officers, employees and independent directors of the Company. A total of 10.1 million shares were authorized for grant under the 2012 Plan. Effective upon the closing of our initial public offering, the Company's board of directors and its stockholders adopted the TransUnion 2015 Omnibus Incentive Plan, which has since been amended and restated (the "2015 Plan"), and no more shares can be issued under the 2012 Plan. During 2020, we increased the authorized shares available under the 2015 plan to a total of 12.4 million shares. The 2015 Plan provides for the granting of stock options, restricted stock awards and restricted stock units to key employees, directors or other persons having a service relationship with the Company and its affiliates. As of December 31, 2022, there were approximately 2.3 million of unvested awards outstanding and approximately 5.0 million of awards have vested under the 2015 Plan.

Effective upon the closing of the initial public offering, the Company's board of directors and its stockholders adopted the TransUnion 2015 Employee Stock Purchase Plan, which has since been amended and restated (the "ESPP"). A total of 2.4 million shares have been authorized to be issued under the ESPP. The ESPP provides certain employees of the Company with an opportunity to purchase the Company's common stock at a discount. As of December 31, 2022, the Company has issued approximately 1.3 million shares of common stock under the ESPP.

2012 Plan

Stock Options

Stock options granted under the 2012 Plan have a 10 year term. For stock options granted to employees, 40% generally vest based on the passage of time (service condition options), and 60% generally vest based on the passage of time, subject to meeting certain stockholder return on investment conditions (market condition options). These stockholder return on investment conditions were satisfied in February 2017, and all remaining outstanding stock options now vest solely on the passage of time. All stock options granted to non-employee directors vest based on the passage of time.

Service condition options were valued using the Black-Scholes valuation model and vest over a 5 year service period, with 20% generally vesting one year after the grant date, and 5% vesting each quarter thereafter. Compensation costs for the service condition options are recognized on a straight-line basis over the requisite service period for the entire award. Market condition options were valued using a risk-neutral Monte Carlo valuation model, with assumptions similar to those used to value the service condition options, and vest over a 5 year service period now that the market conditions have been satisfied. There were no stock options granted during 2022, 2021, and 2020.

Stock option activity as of December 31, 2022 and 2021, and for the year ended December 31, 2022, consisted of the following:

	Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in millions)
Outstanding as of December 31, 2021	242,534	$ 8.05	1.5	$ 26.8
Granted	—	—		
Exercised	(140,236)	6.10		
Forfeited	—	—		
Expired	—	—		
Outstanding as of December 31, 2022	102,298	10.71	1.3	$ 4.7
Expected to vest as of December 31, 2022	—	$ —	0.0	$ —
Exercisable as of December 31, 2022	102,298	$ 10.71	1.3	$ 4.7

As of December 31, 2022, there was no stock-based compensation expense remaining to be recognized in future years related to options. During 2022, cash received from the exercise of stock options was $0.8 million and the tax benefit realized from the exercise of stock options was $2.7 million.

The intrinsic value of options exercised and the fair value of options vested for the periods presented are as follows:

	Twelve Months Ended December 31,		
(in millions)	2022	2021	2020
Intrinsic value of options exercised	$ 10.9	$ 31.4	$ 71.1
Total fair value of options vested	$ 0.6	$ 1.7	$ 4.5

2015 Plan

Restricted Stock Units

During 2022, 2021 and 2020, restricted stock units were granted under the 2015 Plan. Restricted stock units issued to date generally consist of: 50% service-based restricted stock units that vest based on passage of time and 50% performance-based awards consisting of performance-based restricted stock units that vest based on the passage of time, subject to meeting certain 3-year cumulative revenue and Adjusted EBITDA targets, and market-based restricted stock units that vest based on the passage of time, subject to meeting certain relative total stockholder return ("TSR") targets. For the performance awards, including the market-based performance awards, between zero and 200% of the units granted may eventually vest, based upon the final cumulative revenue and Adjusted EBITDA and TSR achievement relative to the targets over the 3-year measurement period. Restricted stock units granted prior to February 2022 generally vest 3 years from the grant date, subject to meeting any performance and market conditions. For restricted stock units granted in 2022, the service-based awards vest over 3.5 years, and the performance-based awards generally vest over 3 years, subject to meeting any performance and market conditions. We occasionally issue off-cycle or special grants that could have different performance measurements and vesting terms.

Service-based and performance-based restricted stock units are valued on the award grant date at the closing market price of our stock. Market-based awards are valued using a risk-neutral Monte-Carlo model, with assumptions similar to those used to value the 2012 Plan market-condition options, based on conditions that existed on the grant date of the award.

Restricted stock unit activity as of December 31, 2022 and 2021, and for the year ended December 31, 2022, consisted of the following:

	Shares	Weighted Average Grant Date Fair Value	Weighted Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in millions)
Outstanding as of December 31, 2021	2,005,065	$ 90.79	1.0	$ 237.8
Granted	1,507,472	90.97		
Vested	(972,892)	78.13		
Forfeited	(218,934)	94.96		
Outstanding as of December 31, 2022	2,320,711	$ 94.73	1.3	$ 131.7
Expected to vest as of December 31, 2022	1,920,050	$ 91.75	1.2	$ 109.0

The fair value and intrinsic value of restricted stock units that vested during the year ended December 31, 2022 was $76.0 million and $90.3 million, respectively. As of December 31, 2022, stock-based compensation expense remaining to be recognized in future years related to restricted stock units that we currently expect to vest was $120.6 million, with weighted-average recognition periods of 2.0 years. During 2022, the tax benefit realized from vested restricted stock units was $14.2 million.

19. Fair Value

The following table summarizes financial instruments measured at fair value, on a recurring basis, as of December 31, 2022:

(in millions)	Total	Level 1	Level 2	Level 3
Assets				
Interest rate swaps (Note 8 and 12)	$ 237.7	$ —	$ 237.7	$ —
Note Receivable (Note 2 and 8)	70.3	—	70.3	—
Available-for-sale debt securities (Note 4)	2.6	—	2.6	—
Total	$ 310.6	$ —	$ 310.6	$ —
Liabilities				
Put option on Cost Method Investment (Note 9 and 11)	$ 10.0	$ —	$ —	$ 10.0
Total	$ 10.0	$ —	$ —	$ 10.0

The following table summarizes financial instruments measured at fair value, on a recurring basis, as of December 31, 2021:

(in millions)	Total	Level 1	Level 2	Level 3
Assets				
Interest rate swaps (Note 8 and 12)	$ 12.1	$ —	$ 12.1	$ —
Available-for-sale debt securities (Note 4)	3.1	—	3.1	—
Total	$ 15.2	$ —	$ 15.2	$ —
Liabilities				
Interest rate swaps (Note 11 and 12)	$ 34.5	$ —	$ 34.5	$ —
Put option on Cost Method Investment (Note 9 and 11)	11.9	—	—	11.9
Contingent consideration (Note 9 and 10)	16.8	—	—	16.8
Total	$ 63.2	$ —	$ 34.5	$ 28.7

Level 2 instruments consist of foreign exchange-traded corporate bonds, interest rate swaps and note receivable. Foreign exchange-traded corporate bonds are available-for-sale debt securities valued at their current quoted prices. These securities mature between 2027 and 2033. Unrealized gains and losses on available-for-sale debt securities, which are not material, are included in other comprehensive income. The interest rate swaps fair values are determined using the market standard methodology of discounting the future expected net cash receipts or payments that would occur if variable interest rates rise above or fall below the fixed rates of the swaps. The variable interest rates used in the calculations of projected receipts on the swaps are based on an expectation of future interest rates derived from observable market interest rate curves and volatilities. As discussed in Note 12, “Debt,” there are two tranches of interest rate swaps that we entered into in 2020. In December 2022, we sold the non-core businesses of our VF acquisition. A portion of the consideration was in the form of a $72.0 million note receivable. The note receivable accrues interest semiannually at a per annum rate of 10.6% and is payable at maturity. The note matures on June 30, 2025, subject to an option of the note issuer to extend the maturity date for two successive terms of three months each, at an increased rate of interest at each extension. The note was recorded at fair value of $70.3 million using an income approach for fixed income securities, where contractual cash flows were discounted to present value at a risk-adjusted rate of return in a lattice model framework. The fair value of the note will be determined period to period by applying the same approach, considering changes to the risk-adjusted rate of return given observed changes to the interest rate environment, market pricing of credit risk, and issuer-specific credit risk.

Level 3 instruments consist of contingent consideration related to a Cost Method investment we acquired in 2021, a put option on the same Cost Method investment, and a contingent consideration obligation of an acquisition made by Neustar prior to the date we acquired Neustar. The put option allows the owner of the other shares to compel TransUnion to purchase their remaining shares, subject to the fulfillment of certain conditions. The fair value of the put option is determined using a Monte Carlo analysis with assumptions that include revenue projections, volatility rates, discount rates and the option period, among others.

During 2022, we paid $14.8 million of contingent consideration obligation related to the Cost Method investment. We also recorded a $0.8 million measurement period adjustment related to the Neustar contingent consideration obligation and paid $2.8 million to fully settle the obligation. During 2021, we also adjusted the carrying value of the 2020 obligations to their fair values, with an offset to selling, general and administrative expenses, and paid $41.2 million to the sellers to settle these obligations in full and have no further obligations related to the 2020 contingent consideration obligations. In addition, during

2021, we assumed a contingent consideration obligation of $2.0 million when we acquired Neustar, and recorded a $14.8 million contingent consideration obligation related to a cost method investment we made in 2021, with no material changes to the fair value of either of these obligations in 2021.

We have elected to account for our investment in a limited partnership that we purchased in 2021, which is not material, using the net asset value fair value practical expedient. Gains and losses on this investment, which are not material, are included in other income and expense in the consolidated statements of income.

20. Reportable Segments

We have three reportable segments, U.S. Markets, International, and Consumer Interactive, and the Corporate unit, which provides support services to each of the segments. Our chief operating decision maker ("CODM") uses the profit measure of Adjusted EBITDA, on both a consolidated and a segment basis, to allocate resources and assess performance of our businesses. We use Adjusted EBITDA as our profit measure because it eliminates the impact of certain items that we do not consider indicative of operating performance, which is useful to compare operating results between periods. Our board of directors and executive management team also use Adjusted EBITDA as a compensation measure for both segment and corporate management under our incentive compensation plans. Adjusted EBITDA is also a measure frequently used by securities analysts, investors and other interested parties in their evaluation of the operating performance of companies similar to ours.

We define Adjusted EBITDA as net income (loss) attributable to each segment plus (less) loss (income) from discontinued operations, plus net interest expense, plus (less) provision (benefit) for income taxes, plus depreciation and amortization, plus (less) certain acquisition-related deferred revenue adjustments, plus stock-based compensation, plus mergers, acquisitions, divestitures and business optimization-related expenses including certain integration-related expenses, plus certain accelerated technology investment expenses to migrate to the cloud, plus (less) certain other expenses (income).

The segment financial information below aligns with how we report information to our CODM to assess operating performance and how we manage the business. The accounting policies of the segments are the same as described in Note 1, "Significant Accounting and Reporting Policies" and Note 15, "Revenue."

The following is a more detailed description of our reportable segments and the Corporate unit, which provides support services to each segment:

U.S. Markets

The U.S. Markets segment provides consumer reports, actionable insights and analytics to businesses. These businesses use our services to acquire customers, assess consumers' ability to pay for services, identify cross-selling opportunities, measure and manage debt portfolio risk, collect debt, verify consumer identities and mitigate fraud risk. The core capabilities and delivery methods in our U.S. Markets segment allow us to serve a broad set of customers across industries.

Since the acquisition of Neustar, Inc. ("Neustar") on December 1, 2021, we have reflected all Neustar revenue in the Emerging Verticals within our U.S. Markets segment. Beginning in the fourth quarter 2022, we integrated the Neustar sales team into our legacy vertically-aligned sales teams, and a portion of the Neustar revenue is now included in the Financial Services vertical. We have recast the revenue reported for each vertical in U.S. Markets in the historical periods to be consistent with the fourth quarter 2022 presentation, which provides comparability among the periods. This recast has no net impact on our overall financial statements in 2022.

We report disaggregated revenue of our U.S. Markets segment for Financial Services and Emerging Verticals.

- ***Financial Services:*** The Financial Services vertical consists of our consumer lending, mortgage, auto and cards and payments lines of business. Our Financial Services clients consist of most banks, credit unions, finance companies, auto lenders, mortgage lenders, FinTechs, and other consumer lenders in the United States. We also distribute our solutions through most major resellers, secondary market players and sales agents. Beyond traditional lenders, we work with a variety of credit arrangers, such as auto dealers and peer-to-peer lenders. We provide solutions across every aspect of the lending lifecycle; customer acquisition and engagement, fraud and ID management, retention and recovery. Our products are focused on mitigating risk and include credit reporting, credit marketing, analytics and consulting, identity verification and authentication and debt recovery solutions. All of the revenue from our Argus acquisition and a portion of the revenue from our Neustar acquisition is included in Financial Services.
- ***Emerging Verticals:*** Emerging Verticals include Technology, Commerce & Communications, Insurance, Media, Services and Collections, Tenant and Employment, and Public Sector. Our solutions in these verticals are also data-driven and address the entire customer lifecycle. We offer onboarding and transaction processing products, scoring and analytic products, marketing solutions, fraud and identity management solutions and customer retention solutions. A portion of the revenue from our Neustar acquisition is included in Emerging Verticals.

International

The International segment provides services similar to our U.S. Markets segment to businesses in select regions outside the United States. Depending on the maturity of the credit economy in each country, services may include credit reports, analytics and solutions services, and other value-added risk management services. In addition, we have insurance, business and automotive databases in select geographies. These services are offered to customers in a number of industries including financial services, insurance, automotive, collections, and communications, and are delivered through both direct and indirect channels. The International segment also provides consumer services similar to those offered by our Consumer Interactive segment that help consumers proactively manage their personal finances and take precautions against identity theft.

We report disaggregated revenue of our International segment for the following regions: Canada, Latin America, the United Kingdom, Africa, India, and Asia Pacific.

Consumer Interactive

The Consumer Interactive segment provides solutions that help consumers manage their personal finances and take precautions against identity theft. Services in this segment include paid and free credit reports, scores and freezes, credit monitoring, identity protection and resolution, and financial management for consumers. The segment also provides solutions that help businesses respond to data breach events. Our products are provided through user-friendly online and mobile interfaces and are supported by educational content and customer support. Our Consumer Interactive segment serves consumers through both direct and indirect channels, as well as our Sontiq business. The results of operations of Sontiq are included in the Consumer Interactive segment in our consolidated statements of income since the date of the acquisition.

Corporate

Corporate provides support services for each of the segments, holds investments, and conducts enterprise functions. Certain costs incurred in Corporate that are not directly attributable to one or more of the segments remain in Corporate. These costs are typically enterprise-level costs and are primarily administrative in nature.

Selected segment financial information and disaggregated revenue consisted of the following:

(in millions)	Twelve Months Ended December 31, 2022	2021	2020
Gross Revenue:			
U.S. Markets:			
Financial Services	$ 1,255.1	$ 1,090.0	$ 939.6
Emerging Verticals	1,192.1	701.0	571.1
Total U.S. Markets	2,447.3	1,791.0	1,510.7
International:			
Canada	128.2	126.9	108.0
Latin America	112.9	103.2	86.5
United Kingdom	203.0	216.5	183.1
Africa	61.7	59.5	49.0
India	174.2	133.1	100.0
Asia Pacific	75.9	62.7	56.2
Total International	755.9	701.9	582.7
Total Consumer Interactive	585.3	545.8	513.1
Total revenue, gross	$ 3,788.4	$ 3,038.7	$ 2,606.5
Intersegment revenue eliminations:			
U.S. Markets	$ (71.5)	$ (70.5)	$ (68.9)
International	(6.0)	(5.9)	(5.2)
Consumer Interactive	(1.1)	(2.0)	(1.7)
Total intersegment eliminations	(78.6)	(78.4)	(75.9)
Total revenue as reported	$ 3,709.9	$ 2,960.2	$ 2,530.6

A reconciliation of Segment Adjusted EBITDA to income from continuing operations before income taxes for the periods presented is as follows:

(in millions)	Twelve Months Ended December 31, 2022	2021	2020
U.S. Markets Adjusted EBITDA	$ 870.6	$ 715.6	$ 593.9
International Adjusted EBITDA	329.3	300.1	219.8
Consumer Interactive Adjusted EBITDA	282.3	263.1	247.6
Total	$ 1,482.3	$ 1,278.8	$ 1,061.2
Adjustments to reconcile to income from continuing operations before income taxes:			
Corporate expenses[1]	(135.7)	(121.9)	(107.6)
Net interest expense	(226.2)	(109.2)	(120.6)
Depreciation and amortization	(519.0)	(377.0)	(346.8)
Stock-based compensation[2]	(81.1)	(70.1)	(45.9)
Mergers and acquisitions, divestitures and business optimization[3]	(50.7)	(52.6)	(8.5)
Accelerated technology investment[4]	(51.4)	(42.3)	(19.3)
Net other[5]	(46.1)	(19.4)	(35.5)
Net income attributable to non-controlling interests	15.2	15.0	12.4
Total adjustments	$ (1,095.1)	$ (777.4)	$ (671.8)
Income from continuing operations before income taxes	$ 387.2	$ 501.4	$ 389.5

1. Certain costs that are not directly attributable to one or more of the segments remain in Corporate. These costs are typically enterprise-level costs and are primarily administrative in nature.
2. Consisted of stock-based compensation and cash-settled stock-based compensation.
3. For the twelve months ended December 31, 2022, $(33.1) million of Neustar integration costs; $(23.7) million of acquisition expenses; $(4.6) million loss on the impairment of a Cost Method investment; $6.8 million of reimbursements for transition services related to divested businesses, net of separation expenses; a $3.4 million gain related to a government tax reimbursement from a recent business acquisition; and a $0.6 million adjustment to the fair value of a put option liability related to a minority investment.

   For the twelve months ended December 31, 2021, consisted of the following adjustments: $(48.1) million of acquisition expenses; $(9.1) million of Neustar integration costs; $(8.4) million of adjustments to contingent consideration expense from previous acquisitions; a $(1.1) million gain reduction to notes receivable that were converted into equity upon acquisition and consolidation of an entity; a $12.5 million gain on a Cost Method investment resulting from an observable price change for a similar investment of the same issuer; a $1.1 million reimbursement for transition services related to divested businesses, net of separation expenses; and a $0.5 million gain on the sale of a Cost Method investment.

   For the twelve months ended December 31, 2020, consisted of the following adjustments: $(7.5) million of Callcredit integration costs; $(7.0) million of acquisition expenses; a $(4.8) million loss on the impairment of a Cost Method investment; $(1.7) million of adjustments to contingent consideration expense from previous acquisitions; an $8.1 million remeasurement gain on notes receivable that were converted into equity upon acquisition and consolidation of an entity; a $2.5 million gain on a Cost Method investment resulting from an observable price change for a similar investment of the same issuer; a $1.8 million gain on the disposal of assets of a small business in our United Kingdom region; and a $0.1 million reimbursement for transition services provided to the buyers of certain of our discontinued operations.
4. Represents expenses associated with our accelerated technology investment to migrate to the cloud.
5. For the twelve months ended December 31, 2022, $(28.4) million for certain legal and regulatory expenses; $(9.3) million of deferred loan fees written off as a result of the prepayments on our debt; and a $(6.3) million net loss from currency remeasurement of our foreign operations; ($1.9) million of loan fees and other.

   For the twelve months ended December 31, 2021, consisted of the following adjustments: $(17.9) million of deferred loan fees written off as a result of the prepayments on our debt; $(1.2) million in certain legal and regulatory expenses; a $3.5 million net recovery from a fraud incident that occurred in July 2019 in our Asia Pacific region; and a $(3.7) million net loss from currency remeasurement of our foreign operations, loan fees and other.

   For the twelve months ended December 31, 2020, consisted of the following adjustments: $(34.7) million for certain legal expenses; $(0.9) million of deferred loan fees written off as a result of the prepayments on our debt; a

$1.5 million net recovery from a fraud incident that occurred in July 2019 in our Asia Pacific region; and a $(1.4) million net loss from currency remeasurement of our foreign operations, loan fees and other.

Earnings from equity method investments included in non-operating income and expense was as follows:

	Twelve Months Ended December 31,		
(in millions)	2022	2021	2020
U.S. Markets	$ 1.0	$ 2.4	$ 2.6
International	12.0	9.6	6.4
Total	$ 13.0	$ 12.0	$ 8.9

Total assets, by segment, consisted of the following:

(in millions)	December 31, 2022	December 31, 2021
U.S. Markets	$ 7,180.9	$ 6,934.8
International	2,675.7	2,921.2
Consumer Interactive	1,202.9	1,222.3
Total segment assets	$ 11,059.5	$ 11,078.2
Corporate [1]	606.8	1,556.8
Total assets	$ 11,666.3	$ 12,635.0

[1] At December 31, 2021 our Corporate assets included proceeds from the disposal of our Healthcare business.

Cash paid for capital expenditures, by segment, was as follows:

	Twelve Months Ended December 31,		
(in millions)	2022	2021	2020
U.S. Markets	$ 181.0	$ 145.3	$ 119.1
International	97.5	65.1	68.2
Consumer Interactive	17.7	11.8	12.8
Corporate	2.0	2.0	5.5
Total	$ 298.2	$ 224.2	$ 205.6

Depreciation and amortization expense by segment was as follows:

	Twelve Months Ended December 31,		
(in millions)	2022	2021	2020
U.S. Markets	$ 352.5	$ 222.0	$ 205.8
International	126.9	132.4	120.6
Consumer Interactive	34.8	16.8	14.6
Corporate	4.9	5.7	5.7
Total	$ 519.0	$ 377.0	$ 346.8

Percentage of revenue based on where it was earned, was as follows:

	Twelve Months Ended December 31,		
	2022	2021	2020
Domestic	80 %	76 %	77 %
International	20 %	24 %	23 %

Percentage of long-lived assets, other than intangibles, financial assets, and deferred tax assets, based on the location of the legal entity that owns the asset, was as follows:

	As of December 31,	
	2022	2021
Domestic	78 %	82 %
International	22 %	18 %

21. Commitments

Future minimum payments for noncancelable operating leases, purchase obligations and other liabilities in effect as of December 31, 2022, are payable as follows:

(in millions)	Operating Leases	Purchase Obligations and Other	Total
2023	$ 38.2	$ 150.3	$ 188.5
2024	29.4	88.6	118.0
2025	19.9	59.4	79.3
2026	15.6	29.7	45.3
2027	12.0	20.4	32.4
Thereafter	39.6	0.9	40.5
Totals	$ 154.7	$ 349.3	$ 504.0

Purchase obligations and other excludes trade accounts payable that are included in our balance sheet as of December 31, 2022. Purchase obligations and other include commitments for outsourcing services, royalties, data licenses, and maintenance and other operating expenses.

Licensing agreements

We have agreements with Fair Isaac Corporation to license credit-scoring algorithms and the right to sell credit scores derived from those algorithms. Payment obligations under these agreements vary due to factors such as the volume of credit scores we sell, what type of credit scores we sell, and how our customers use the credit scores. There are no minimum payments required under these licensing agreements. However, we do have a significant level of sales volume related to these credit scores.

22. Contingencies

Legal and Regulatory Matters

We are routinely named as defendants in, or parties to, various legal actions and proceedings relating to our current or past business operations. These actions generally assert claims for violations of federal or state credit reporting, consumer protection or privacy laws, or common law claims related to the unfair treatment of consumers, and may include claims for substantial or indeterminate compensatory or punitive damages, or injunctive relief, and may seek business practice changes. We believe that most of these claims are either without merit or we have valid defenses to the claims, and we vigorously defend these matters or seek non-monetary or small monetary settlements, if possible. However, due to the uncertainties inherent in litigation, we cannot predict the outcome of each claim in each instance.

In the ordinary course of business, we also are subject to governmental and regulatory examinations, information-gathering requests, investigations and proceedings (both formal and informal), certain of which may result in adverse judgments, settlements, fines, penalties, injunctions or other relief. In connection with formal and informal inquiries by these regulators, we routinely receive requests, subpoenas and orders seeking documents, testimony, and other information in connection with various aspects of our activities.

In view of the inherent unpredictability of legal and regulatory matters, particularly where the damages sought are substantial or indeterminate or when the proceedings or investigations are in the early stages, we cannot determine with any degree of certainty the timing or ultimate resolution of legal and regulatory matters or the eventual loss, fines or penalties, if any, that may result from such matters. We establish reserves for legal and regulatory matters when those matters present loss contingencies that are both probable and can be reasonably estimated. However, for certain of the matters, we are not able to reasonably estimate our exposure because damages have not been specified and (i) the proceedings are in early stages, (ii) there is uncertainty as to the likelihood of a class being certified or the ultimate size of the class, (iii) there is uncertainty as to the outcome of similar matters pending against our competitors, (iv) there are significant factual issues to be resolved, and/or (v)

there are legal issues of a first impression being presented. The actual costs of resolving legal and regulatory matters, however, may be substantially higher than the amounts reserved for those matters, and an adverse outcome in certain of these matters could have a material adverse effect on our consolidated financial statements in particular quarterly or annual periods. We accrue amounts for certain legal and regulatory matters for which losses were considered to be probable of occurring based on our best estimate of the most likely outcome. It is reasonably possible actual losses could be significantly different from our current estimates. In addition, there are some matters for which it is reasonably possible that a loss will occur, however we cannot estimate a range of the potential losses for these matters. Legal fees incurred in connection with ongoing legal and regulatory matters are considered a period cost and are expensed as incurred.

To reduce our exposure to an unexpected significant monetary award resulting from an adverse judicial decision, we maintain insurance that we believe is appropriate and adequate based on our historical experience. We regularly advise our insurance carriers of the claims, threatened or pending, against us in legal and regulatory matters and generally receive a reservation of rights letter from the carriers when such claims exceed applicable deductibles. We are not aware of any significant monetary claim that has been asserted against us in the course of pending litigation except for the lawsuit filed by the CFPB referenced below, that would not have some level of coverage by insurance after the relevant deductible, if any, is met.

As of December 31, 2022 and 2021, we accrued $125.0 million and $85.6 million, respectively, for legal and regulatory matters. These amounts were recorded in other accrued liabilities in the consolidated balance sheets and the associated expenses were recorded in selling, general and administrative expenses in the consolidated statements of income. Legal fees incurred in connection with ongoing litigation are considered period costs and are expensed as incurred.

Ramirez v. Trans Union LLC

In Ramirez v. Trans Union LLC ("Ramirez") filed in 2012, the plaintiff alleged that we willfully violated the Fair Credit Reporting Act ("FCRA") by continuing to offer the OFAC Alert service. In July 2014, the trial Court in Ramirez certified a class of 8,185 individuals solely for purposes of statutory damages if TransUnion was ultimately found to have willfully violated the FCRA.

On June 21, 2017, the jury in Ramirez returned a verdict in favor of a class of 8,185 individuals and awarded punitive and statutory damages totaling approximately $60 million. We appealed the Ramirez ruling to the United States Court of Appeals for the Ninth Circuit and on February 27, 2020, the Ninth Circuit affirmed in part and reversed and vacated in part the trial court's judgment, holding that the punitive damages award was excessive in violation of constitutional due process. On September 2, 2020, we filed a Petition for *Certiorari* with the United States Supreme Court. On December 16, 2020, the United States Supreme Court granted the Petition for *Certiorari* with respect to whether Article III of the United States Constitution or Rule 23 of the Federal Rules of Civil Procedure permit a damages class action where the vast majority of the class suffered no actual injury, let alone an injury anything like what the class representative suffered.

On June 25, 2021, the United States Supreme Court's decision reversed the Ninth Circuit opinion, and remanded the matter back to the lower courts for further proceedings consistent with its opinion. The United States Supreme Court's opinion held that only plaintiffs who have suffered a concrete harm by a defendant's statutory violation have Article III standing to seek damages against defendants in Federal court. Based on the ruling, only approximately 23% of the class was determined to have suffered concrete harm.

On January 24, 2022, we reached a tentative class settlement with the plaintiffs, which required court approval. Accordingly, we revised the amount of the probable loss that we previously estimated, resulting in a reduction of our estimated liability and partially offsetting insurance receivable, and a corresponding net reduction recorded in selling, general and administrative expense for the year-end December 31, 2021.

On December 19, 2022, the court entered final approval of the class settlement and we paid the settlement amount to the plaintiffs on January 20, 2023, resulting in a full resolution of this matter.

CFPB Matters

In June 2021, we received a Notice and Opportunity to Respond and Advise ("NORA") letter from the Consumer Financial Protection Bureau ("CFPB"), informing us that the CFPB's Enforcement Division was considering whether to recommend that the CFPB take legal action against us and certain of our executive officers. The NORA letter alleged that we failed to comply with and timely implement a Consent Order issued by the CFPB in January 2017 (the "Consent Order"), and further alleged additional violations related to Consumer Interactive's marketing practices. On September 27, 2021, the Enforcement Division advised us that it had obtained authority to pursue an enforcement action. On April 12, 2022, after failed settlement negotiations with the CFPB related to the matter, the CFPB filed a lawsuit against us, Trans Union LLC, TransUnion Interactive, Inc. (collectively, the "TU Entities") and the former President of Consumer Interactive, John Danaher, in the United States District Court for the Northern District of Illinois seeking restitution, civil money penalties, and injunctive relief, among other remedies, and alleging that the TU Entities violated the Consent Order, engaged in deceptive acts and practices in marketing the TransUnion Credit Monitoring product, failed to obtain signed written authorizations from consumers before debiting their

bank accounts for the TransUnion Credit Monitoring product and diverted consumers from their free annual file disclosure into paid subscription products. The CFPB further alleges that Mr. Danaher violated the Consent Order and that we and Trans Union LLC provided substantial assistance to TransUnion Interactive, Inc. in violating the Consent Order and the law. We continue to believe that our marketing practices are lawful and appropriate and that we have been, and remain, in compliance with the Consent Order, and we will vigorously defend against allegations to the contrary in such proceedings. On July 8, 2022, the TU Entities and Mr. Danaher each filed a motion to dismiss the lawsuit. The motions to dismiss were denied on November 18, 2022; active litigation on this matter has begun.

As of December 31, 2022, we have an accrued liability of $56.0 million, compared with $26.5 million as of December 31, 2021, in connection with this matter and there is a reasonable possibility that a loss in excess of the amount accrued may be incurred, and such an outcome could have a material adverse effect on our results of operations and financial condition. However, any possible loss or range of loss in excess of the amount accrued is not reasonably estimable at this time. In addition, we will incur increased costs litigating this matter.

In March 2022, we received a NORA letter from the CFPB, informing us that the CFPB's Enforcement Division is considering whether to recommend that the CFPB take legal action against us related to our tenant and employment screening business, TransUnion Rental Screening Solutions, Inc. ("TURSS"). The NORA letter alleges that Trans Union LLC and TURSS violated the Fair Credit Reporting Act by failing to (i) follow reasonable procedures to assure maximum possible accuracy of information in consumer reports and (ii) disclose to consumers the sources of such information. On July 27, 2022, the CFPB's Enforcement Division advised us that it had obtained authority to pursue an enforcement action jointly with the FTC. We are currently engaged in active settlement discussions with the CFPB and the FTC regarding this matter. If our ongoing discussions do not result in a negotiated resolution, we expect that the CFPB and the FTC will pursue litigation against Trans Union LLC and TURSS seeking redress, civil monetary penalties and injunctive relief. We continue to believe that our acts and practices are lawful and we intend to vigorously defend against any allegations to the contrary in such proceedings. We cannot provide assurance that the CFPB and the FTC will not ultimately commence a legal action against us in this matter, nor are we able to predict the likely outcome of any such action. As of December 31, 2022, we have recorded an accrued liability for an immaterial amount in connection with this matter. There is a reasonable possibility that a loss in excess of the amount accrued may be incurred, and such an outcome could have a material adverse effect on our results of operations and financial condition. However, any possible loss or range of loss in excess of the amount accrued is not reasonably estimable at this time.

In June 2022, the CFPB informed Trans Union LLC that it intended to issue a NORA letter following an investigation relating to potential violations of law in connection with the placement and lifting of security freezes resulting from certain system issues. In August 2022, the TransUnion Entities received a NORA letter from the CFPB, informing us that the CFPB's Enforcement Division is considering whether to recommend that the CFPB take legal action against us. We are continuing to cooperate in the CFPB's investigation of this matter. We have corrected associated system issues and have processes in place to monitor and address issues going forward. Should the CFPB commence an action against us, it may seek restitution, disgorgement, civil monetary penalties, injunctive relief or other corrective action. We cannot provide assurance that the CFPB will not ultimately commence a legal action against us in this matter, nor are we able to predict the likely outcome, which could have a material adverse effect on our results of operations and financial condition. As of December 31, 2022, we are not able to reasonably estimate our potential loss or range of loss related to this matter.

Department of Justice Matter

We are cooperating with an inquiry originating from the civil division of the United States Attorney's Office for the Eastern District of Virginia related to Argus's use of certain data it collected under certain government contracts. We acquired Argus in connection with our acquisition of VF in April 2022. This matter pertains to alleged conduct that commenced before we acquired Argus. This matter has expanded into a formal investigation, and we are cooperating with Verisk Analytics, Inc. to respond to the Department of Justice's investigation. We cannot predict the timing, outcome, or potential impact of this matter, financial or otherwise. Under the stock purchase agreement Trans Union LLC entered into with Verisk Analytics, Inc. (the "Seller") pursuant to which we acquired VF, including Argus, the Seller agreed to indemnify us for certain losses with respect to this matter, including all losses directly resulting from any settlement agreement in connection with this matter, including civil monetary penalties, remediation costs and fees and expenses.

23. Accumulated Other Comprehensive Loss

The following table sets forth the changes in each component of accumulated other comprehensive loss, net of tax:

(in millions)	Foreign Currency Translation Adjustment	Net Unrealized Gain/(Loss) On Hedges	Net Unrealized Gain/(Loss) On Available-for-sale Securities	Accumulated Other Comprehensive Loss
Balance, December 31, 2019	$ (214.6)	$ (37.2)	$ 0.2	$ (251.6)
Change	9.2	(29.9)	0.2	(20.5)
Balance, December 31, 2020	$ (205.4)	$ (67.1)	$ 0.4	$ (272.1)
Change	(63.8)	50.5	—	(13.3)
Balance, December 31, 2021	$ (269.2)	$ (16.6)	$ 0.4	$ (285.4)
Change	(194.3)	195.2	(0.2)	0.9
Balance, December 31, 2022	$ (463.5)	$ 178.6	$ 0.2	$ (284.5)

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

Not applicable.

ITEM 9A. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of our disclosure controls and procedures as of the end of the period covered by this report. The term "disclosure controls and procedures" as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms.

Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company's management, including its principal executive and principal financial officers, as appropriate, to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of the end of the period covered by this report, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Management's Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. TransUnion'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 U.S. generally accepted accounting principles. 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 TransUnion;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with U.S. generally accepted accounting principles;
- provide reasonable assurance that receipts and expenditures of TransUnion are being made only in accordance with the authorizations of management and directors of TransUnion; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of assets that could have a material effect on the consolidated 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's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls over financial reporting of Argus Information and Advisory Services, Inc. and Commerce Signals, Inc. (collectively, "Argus"), which we acquired in a business combination during 2022, and which is included in the 2022 consolidated financial statements of TransUnion from the date of acquisition. As of December 31, 2022, total assets of Argus represented less than 1%, of TransUnion's consolidated total assets. Total revenues attributable to Argus represented approximately 2% of TransUnion's consolidated total revenue for the year ended December 31, 2022.

Management assessed the effectiveness of TransUnion's internal control over financial reporting as of December 31, 2022. In making this assessment, management used the criteria described in *Internal Control—Integrated Framework* as issued by the Committee of Sponsoring Organizations of the Treadway Commission in 2013.

Management's assessment included an evaluation of the design of TransUnion's internal control over financial reporting and testing of the operational effectiveness of its internal control over financial reporting. Management reviewed the results of its assessment with the Audit Committee of TransUnion's Board of Directors. Our independent registered public accounting firm, PricewaterhouseCoopers LLP has issued an attestation report on TransUnion's internal control over financial reporting that is included in this Annual Report on Form 10-K.

Based on our assessment, management has concluded that, as of December 31, 2022, TransUnion's internal control over financial reporting was effective based on those criteria. Our independent registered public accounting firm, PricewaterhouseCoopers LLP, has audited the effectiveness of TransUnion's internal control over financial reporting as of December 31, 2022, as stated in their report which is included in this Annual Report on Form 10-K.

Changes in internal control over financial reporting

During the quarter ended December 31, 2022, there have been no changes in our internal control over financial reporting that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None.

ITEM 9C. DISCLOSURES REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this item is incorporated by reference to our Proxy Statement for the 2023 Annual Meeting of Stockholders to be held on May 4, 2023, which will be filed with the SEC within 120 days of the end of our fiscal year ended December 31, 2022.

Code of Business Conduct and Ethics

We have adopted a Code of Business Conduct and Ethics that applies to all directors, officers and employees. Our Code of Business Conduct and Ethics is available in the "Investor Relations" section of our website at www.transunion.com, under the tab "Leadership and Governance," and a copy of the Code of Business Conduct and Ethics may also be obtained free of charge upon a request directed to TransUnion, 555 West Adams Street, Chicago, Illinois 60661, Attn: Corporate Secretary. Our Code of Business Conduct and Ethics is a "code of ethics," as defined in Item 406(b) of Regulation S-K. We will make any legally required disclosures regarding amendments to, or waivers of, provisions of our code of ethics on our website.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this item is incorporated by reference to our Proxy Statement for the 2023 Annual Meeting of Stockholders to be held on May 4, 2023, which will be filed with the SEC within 120 days of the end of our fiscal year ended December 31, 2022.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by this item is incorporated by reference to our Proxy Statement for the 2023 Annual Meeting of Stockholders to be held on May 4, 2023, which will be filed with the SEC within 120 days of the end of our fiscal year ended December 31, 2022.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this item is incorporated by reference to our Proxy Statement for the 2023 Annual Meeting of Stockholders to be held on May 4, 2023, which will be filed with the SEC within 120 days of the end of our fiscal year ended December 31, 2022.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information required by this item is incorporated by reference to our Proxy Statement for the 2023 Annual Meeting of Stockholders to be held on May 4, 2023, which will be filed with the SEC within 120 days of the end of our fiscal year ended December 31, 2022.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) **List of Documents Filed as a Part of This Report:**

(1) *Financial Statements*. The following financial statements are included in Item 8 of Part II:

- Consolidated Balance Sheets—December 31, 2022 and 2021;
- Consolidated Statements of Income for the years ended December 31, 2022, 2021 and 2020;
- Consolidated Statements of Comprehensive Income for the years ended December 31, 2022, 2021 and 2020;
- Consolidated Statements of Cash Flows for the years ended December 31, 2022, 2021 and 2020;
- Consolidated Statements of Stockholders' Equity for the years ended December 31, 2022, 2021 and 2020; and
- Notes to Consolidated Financial Statements.

(2) *Financial Statement Schedules.*

- Schedule I - Condensed Financial Information of TransUnion as of December 31, 2022 and 2021, and for the years ended December 31, 2022, 2021 and 2020 and the accompanying notes; and
- Schedule II—Valuation and Qualifying Accounts for the years ended December 31, 2022, 2021 and 2020.

Schedules I and II are filed as part of this Report and are set forth immediately following the signature page.

(3) The following exhibits are filed with this Annual Report on Form 10-K for the fiscal year ended December, 31, 2022, or incorporated herein by reference.

Exhibit No.	Exhibit Name
2.1††	Securities Purchase Agreement, dated as of September 11, 2021, by and between Trans Union LLC and Aerial Investors LLC (Incorporated by reference to Exhibit 2.1 to TransUnion's Current Report on Form 8-K filed on September 13, 2021).
2.2††	Stock Purchase Agreement, dated as of October 26, 2021, by and between Trans Union LLC and nThrive, Inc. (Incorporated by reference to Exhibit 2.2 to TransUnion's Annual Report on Form 10-K filed on February 22, 2022).
3.1	Third Amended and Restated Certificate of Incorporation of TransUnion (Incorporated by reference to Exhibit 3.1.2 to TransUnion's Current Report on Form 8-K filed on May 18, 2020).
3.2	Fourth Amended and Restated Bylaws of TransUnion (Amended as of November 18, 2022) (Incorporated by reference to Exhibit 3.1 to TransUnion's Current Report on Form 8-K filed on November 23, 2022).
4.1	Form of Stock Certificate for Common Stock (Incorporated by reference to Exhibit 4.6 to TransUnion's Amendment No. 3 to Registration Statement on Form S-1 filed on June 15, 2015).
4.2	Description of TransUnion's securities (Incorporated by reference to Exhibit 4.2 to TransUnion's Annual Report on Form 10-K filed on February 16, 2021).
10.1	Amendment No. 13 to Credit Agreement, dated as of August 9, 2017, by and among TransUnion Intermediate Holdings, Inc., Trans Union LLC, the guarantors party thereto, Deutsche Bank AG New York Branch, as Administrative Agent and as Collateral Agent, Deutsche Bank AG New York Branch, as L/C Issuer, the other lenders from time to time party thereto and Deutsche Bank Securities, Inc., Capital One, N.A., Goldman Sachs Lending Partners LLC, JP Morgan Chase Bank, N.A., Merrill Lynch, Pierce, Fenner & Smith Incorporated, RBC Capital Markets and Wells Fargo Securities, LLC, as joint lead arrangers and joint bookrunners (Incorporated by reference to Exhibit 10.1 to TransUnion's Quarterly Report on Form 10-Q filed on October 27, 2017).
10.2	Amendment No. 14 to Credit Agreement, dated as of May 2, 2018, by and among TransUnion Intermediate Holdings, Inc. (f/k/a TransUnion Corp.), Trans Union LLC, the Guarantors, Deutsche Bank Securities Inc., Capital One, N.A., Merrill Lynch, Pierce, Fenner & Smith Incorporated and RBC Capital Markets, as joint lead arrangers, Deutsche Bank AG New York Branch, as administrative agent and collateral agent, and each of the other Lenders party thereto (Incorporated by reference to Exhibit 10.1 to TransUnion's Quarterly Report on Form 10-Q filed on July 25, 2018).

10.3	Amendment No. 15 to Credit Agreement, dated as of June 19, 2018, by and among TransUnion Intermediate Holdings, Inc. (f/k/a TransUnion Corp.), Trans Union LLC, the Guarantors, Deutsche Bank Securities Inc., RBC Capital Markets, Merrill Lynch, Pierce, Fenner & Smith Incorporated and Capital One, N.A., as joint lead arrangers, Deutsche Bank AG New York Branch, as administrative agent and collateral agent, and each of the other Lenders party thereto (Incorporated by reference to Exhibit 10.2 to TransUnion's Quarterly Report on Form 10-Q filed on July 25, 2018).
10.4	Amendment No. 16 to Credit Agreement, dated as of June 29, 2018, by and among TransUnion Intermediate Holdings, Inc. (f/k/a TransUnion Corp.), Trans Union LLC, the Guarantors, Deutsche Bank Securities Inc., RBC Capital Markets, Merrill Lynch, Pierce, Fenner & Smith Incorporated and Capital One, N.A., as joint lead arrangers, Deutsche Bank AG New York Branch, as administrative agent and collateral agent, and each of the other Lenders party thereto (Incorporated by reference to Exhibit 10.3 to TransUnion's Quarterly Report on Form 10-Q filed on July 25, 2018).
10.5	Amendment No. 17 to Credit Agreement, dated as of November 15, 2019, by and among TransUnion Intermediate Holdings, Inc. (f/k/a TransUnion Corp.), Trans Union LLC, the Guarantors, Deutsche Bank Securities Inc., BofA Securities, Inc., Capital One, N.A. and RBC Capital Markets, as joint lead arrangers, Deutsche Bank AG New York Branch, as administrative agent and collateral agent, and each of the other Lenders party thereto (Incorporated by reference to Exhibit 10.5 to TransUnion's Annual Report on Form 10-K filed on February 18, 2020).
10.6	Amendment No. 18 to Credit Agreement, dated as of December 10, 2019, by and among TransUnion Intermediate Holdings, Inc. (f/k/a TransUnion Corp.), Trans Union LLC, the Guarantors, Deutsche Bank Securities Inc., BofA Securities, Inc., Capital One, N.A. RBC Capital Markets, Wells Fargo Securities LLC and JP Morgan Chase Bank, N.A. as joint lead arrangers, Deutsche Bank AG New York Branch, as administrative agent and collateral agent, and each of the other Lenders party thereto (Incorporated by reference to Exhibit 10.6 to TransUnion's Annual Report on Form 10-K filed on February 18, 2020).
10.7	Amendment No. 19 to Credit Agreement, dated as of December 1, 2021, by and among TransUnion Intermediate Holdings, Inc. (f/k/a TransUnion Corp.), Trans Union LLC, the Guarantors, Deutsche Bank Securities Inc., Bank of America, N.A., Capital One, N.A., JP Morgan Chase Bank, N.A., Royal Bank of Canada as joint lead arrangers and joint bookrunners, Deutsche Bank AG New York Branch, as administrative agent and collateral agent, and each of the other Lenders party thereto. (Incorporated by reference to Exhibit 10.7 to TransUnion's Annual Report on Form 10-K filed on February 22, 2022).
10.8	Second Lien Credit Agreement, dated as of December 1, 2021, by and among TransUnion Intermediate Holdings, Inc., Trans Union LLC, the Guarantors, JPMorgan Chase Bank, N.A., as administrative agent and collateral agent, each of the other Lenders party thereto, JPMorgan Chase Bank, N.A., Deutsche Bank Securities Inc. and Wells Fargo Securities, LLC, as joint lead arrangers and joint bookrunners. (Incorporated by reference to Exhibit 10.8 to TransUnion's Annual Report on Form 10-K filed on February 22, 2022).
10.9†	TransUnion Holding Company, Inc. 2012 Management Equity Plan (Effective April 30, 2012) (Incorporated by reference to Exhibit 10.1 to TransUnion's Registration Statement on Form S-4 filed July 31, 2012).
10.10†	TransUnion Holding Company, Inc. 2012 Management Equity Plan Stock Option Agreement (Effective April 30, 2012) (Incorporated by reference to Exhibit 10.2 to TransUnion's Registration Statement on Form S-4 filed July 31, 2012).
10.11†	Amendment No. 1 to TransUnion Holding Company, Inc. 2012 Management Equity Plan Stock Option Agreement, dated as of January 1, 2016 (Incorporated by reference to Exhibit 10.7 to TransUnion's Annual Report on Form 10-K for the year ended December 31, 2015).
10.12	Form of Director Indemnification Agreement for directors of TransUnion (Incorporated by reference to Exhibit 10.6 to TransUnion's Registration Statement on Form S-4 filed July 31, 2012).
10.13†	Employment Agreement with James M. Peck, President and Chief Executive Officer of TransUnion and TransUnion Intermediate Holdings, Inc., dated December 6, 2012 (Incorporated by reference to Exhibit 10.15 to TransUnion's and TransUnion Intermediate Holdings, Inc.'s Annual Report on Form 10-K for the year ended December 31, 2012).
10.14†	Letter Agreement between TransUnion and Reed Elsevier with respect to the employment of James M. Peck as the President and Chief Executive Officer of TransUnion and TransUnion Intermediate Holdings, Inc., dated December 6, 2012 (Incorporated by reference to Exhibit 10.16 to TransUnion's and TransUnion Intermediate Holdings, Inc.'s Annual Report on Form 10-K for the year ended December 31, 2012).

10.15†	Employment Agreement, dated as of November 13, 2018, by and between TransUnion and Christopher A. Cartwright (Incorporated by reference to Exhibit 10.1 to TransUnion's Current Report on Form 8-K filed on November 14, 2018).
10.16†	Employment Agreement, dated as of November 13, 2018, by and between TransUnion and James M. Peck (Incorporated by reference to Exhibit 10.2 to TransUnion's Current Report on Form 8-K filed on November 14, 2018).
10.17†	Retirement and Transition Agreement, dated as of April 1, 2021, by and between TransUnion and John Danaher (Incorporated by reference to Exhibit 10.1 to TransUnion's Current Report on Form 8-K filed on April 7, 2021).
10.18†	Retirement and Transition Agreement, dated as of August 12, 2021, by and between TransUnion and David Neenan (Incorporated by reference to Exhibit 10.1 to TransUnion's Current Report on Form 8-K filed on August 13, 2021).
10.19†	Employment Agreement, dated as of August 12, 2021 by and among TransUnion, Trans Union of Canada, Inc. and Todd Skinner (Incorporated by reference to Exhibit 10.2 to TransUnion's Quarterly Report on Form 10-Q filed on October 26, 2021).
10.20†	Form of TransUnion Executive Severance and Restrictive Covenant Agreement (Incorporated by reference to Exhibit 10.3 to TransUnion's Quarterly Report on Form 10-Q filed on October 26, 2021).
10.21†	Amended and Restated TransUnion 2015 Omnibus Incentive Plan (Incorporated by reference to Exhibit 10.1 to TransUnion's Current Report on Form 8-K filed on May 18, 2020).
10.22†	TransUnion 2015 Omnibus Incentive Plan Award Agreement with respect to Restricted Stock Units (U.S. Employees). (Incorporated by reference to Exhibit 10.22 to TransUnion's Annual Report on Form 10-K filed on February 22, 2022).
10.23†	TransUnion 2015 Omnibus Incentive Plan Award Agreement with respect to Performance Share Units (U.S. Employees). (Incorporated by reference to Exhibit 10.23 to TransUnion's Annual Report on Form 10-K filed on February 22, 2022).
10.24†	TransUnion 2015 Omnibus Incentive Plan Award Agreement with respect to Restricted Stock (Outside Directors) (Incorporated by reference to Exhibit 10.3 to TransUnion's Quarterly Report on Form 10-Q for the quarter ended June 30, 2016).
10.25†	TransUnion 2015 Employee Stock Purchase Plan, as Amended and Restated, Effective November 6, 2018 (Incorporated by reference to Exhibit 10.24 to TransUnion's Annual Report on Form 10-K for the year ended December 31, 2018).
10.26	Consent Order Issued by the United States Consumer Financial Protection Bureau on January 3, 2017, Administrative Proceeding - File No. 2017-CFPB-0002, In the Matter of: TransUnion Interactive, Inc., Trans Union LLC and TransUnion (Incorporated by reference to Exhibit 10.25 to TransUnion's Annual Report on Form 10-K for the year ended December 31, 2016).
21**	Subsidiaries of TransUnion.
23.1**	Consent of PricewaterhouseCoopers LLP.
24**	Power of Attorney - TransUnion (included on the signature page of this Form 10-K).
31.1**	Certification of Principal Executive Officer for TransUnion pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2**	Certification of Principal Financial Officer for TransUnion pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32**	Certification of Chief Executive Officer and Chief Financial Officer for TransUnion pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS**	XBRL Instance Document.
101.SCH**	XBRL Taxonomy Extension Schema Document.
101.CAL**	XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF**	XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB**	XBRL Taxonomy Extension Label Linkbase Document.

101.PRE**	XBRL Taxonomy Extension Presentation Linkbase Document.
104**	Cover Page Interactive Data File (formatted as inline XBRL and contained in Exhibit 101).

† Identifies management contracts and compensatory plans or arrangement.
** Filed or furnished herewith.
†† Schedules and exhibits have been omitted pursuant to Item 601(a)(5) of Regulation S-K. A copy of any omitted schedule or exhibit will be furnished to the SEC upon request; provided, however, that the parties may request confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended, for any document so furnished.

(4) Valuation and qualifying accounts.

(b) **Exhibits.** See Item 15(a)(3).

(c) **Financial Statement Schedules**. See Item 15(a)(2).

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, on February 14, 2023.

TransUnion

By: /s/ Todd M. Cello

Todd M. Cello
Executive Vice President and Chief Financial Officer

POWER OF ATTORNEY

The officers and directors whose signatures appear below constitute and appoint Heather J. Russell and Rachel W. Mantz as their true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for them in their name, place and stead, in any and all capacities, to sign and file, with the Securities and Exchange Commission, this Form 10-K and any and all amendments and exhibits thereto, and all documents in connection therewith, granting unto each such attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done, as fully and to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that such attorneys-in-fact and agents or their substitutes may lawfully do or cause to be done by virtue hereof.

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 and in the capacities indicated on February 14, 2023.

Signature	Title
/s/ Christopher A. Cartwright Christopher A. Cartwright	President and Chief Executive Officer, Director (Principal Executive Officer)
/s/ Todd M. Cello Todd M. Cello	Executive Vice President and Chief Financial Officer (Principal Financial Officer)
/s/ Jennifer A. Williams Jennifer A. Williams	Senior Vice President and Chief Accounting Officer (Principal Accounting Officer)
/s/ George M. Awad George M. Awad	Director
/s/ William P. (Billy) Bosworth William P. (Billy) Bosworth	Director
/s/ Suzanne P. Clark Suzanne P. Clark	Director
/s/ Hamidou Dia Hamidou Dia	Director
/s/ Russell P. Fradin Russell P. Fradin	Director
/s/ Charles E. Gottdiener Charles E. Gottdiener	Director
/s/ Pamela A. Joseph Pamela A. Joseph	Director
/s/ Thomas L. Monahan, III Thomas L. Monahan, III	Director
/s/ Andrew Prozes Andrew Prozes	Director
/s/ Ravi Kumar Singisetti Ravi Kumar Singisetti	Director
/s/ Linda K. Zukauckas Linda K. Zukauckas	Director

Schedule I—Condensed Financial Information of TransUnion

TRANSUNION
Parent Company Only
Balance Sheet
(in millions, except per share data)

	December 31, 2022	December 31, 2021
Assets		
Current assets:		
Other current assets	$ —	$ 0.4
Total current assets	—	0.4
Investment in TransUnion Intermediate Holdings, Inc.	4,587.0	4,217.6
Other assets	6.0	6.1
Total assets	$ 4,593.0	$ 4,224.1
Liabilities and stockholders' equity		
Current liabilities:		
Trade accounts payable	$ 0.1	$ 0.3
Due to TransUnion Intermediate Holdings, Inc.	419.6	312.0
Other current liabilities	1.2	1.3
Total current liabilities	420.9	313.6
Other liabilities	2.2	2.4
Total liabilities	423.1	316.0
Stockholders' equity:		
Common stock, $0.01 par value; 1.0 billion shares authorized at December 31, 2022 and December 31, 2021; 198.7 million and 197.4 million shares issued as of December 31, 2022 and December 31, 2021, respectively; and 192.7 million and 191.8 million shares outstanding as of December 31, 2022 and December 31, 2021, respectively	2.0	2.0
Additional paid-in capital	2,290.3	2,188.9
Treasury stock at cost; 6.0 million and 5.6 million shares at December 31, 2022 and December 31, 2021, respectively	(284.5)	(252.0)
Retained earnings	2,446.6	2,254.6
Accumulated other comprehensive loss	(284.5)	(285.4)
Total stockholders' equity	4,169.9	3,908.1
Total liabilities and stockholders' equity	$ 4,593.0	$ 4,224.1

See accompanying notes to condensed financial statements.

Schedule I —Condensed Financial Information of TransUnion

TRANSUNION
Parent Company Only
Statement of Income
(in millions)

	Twelve Months Ended December 31,		
	2022	2021	2020
Revenue	$ —	$ —	$ —
Operating expenses			
Selling, general and administrative	3.5	3.5	3.1
Total operating expenses	3.5	3.5	3.1
Operating loss	(3.5)	(3.5)	(3.1)
Non-operating income and expense			
Equity Income from TransUnion Intermediate Holdings, Inc.	272.3	1,388.6	345.0
Other income and (expense), net	—	—	0.2
Total non-operating income and expense	272.3	1,388.6	345.2
Income from continuing operations before income taxes	268.8	1,385.1	342.1
Benefit for income taxes	0.7	2.0	1.1
Net income	$ 269.5	$ 1,387.1	$ 343.2

See accompanying notes to condensed financial statements.

Schedule I —Condensed Financial Information of TransUnion

TRANSUNION
Parent Company Only
Statements of Comprehensive Income
(in millions)

	Twelve Months Ended December 31,		
	2022	2021	2020
Net income	$ 269.5	$ 1,387.1	$ 343.2
Other comprehensive income:			
Foreign currency translation of TransUnion Intermediate Holdings, Inc.:			
Foreign currency translation adjustment	(193.4)	(64.1)	8.4
Benefit (provision) for income taxes	(0.7)	0.3	0.8
Foreign currency translation, net	(194.1)	(63.8)	9.2
Hedge instruments of TransUnion Intermediate Intermediate Holdings, Inc.:			
Net change on interest rate cap	—	—	4.1
Net change on interest rate swap	260.1	67.3	(43.5)
(Provision) benefit for income taxes	(64.9)	(16.8)	9.5
Hedge instruments, net	195.2	50.5	(29.9)
Available-for-sale securities of TransUnion Intermediate Holdings, Inc.:			
Net unrealized gain (loss)	(0.3)	—	0.3
Benefit (provision) for income taxes	0.1	—	(0.1)
Available-for-sale securities, net	(0.2)	—	0.2
Total other comprehensive (loss) income, net of tax	0.9	(13.3)	(20.5)
Comprehensive income attributable to TransUnion	$ 270.4	$ 1,373.8	$ 322.7

See accompanying notes to condensed financial statements.

Schedule I —Condensed Financial Information of TransUnion

TRANSUNION
Parent Company Only
Statement of Cash Flows
(in millions)

	Twelve Months Ended December 31,		
	2022	2021	2020
Cash provided by operating activities	$ 91.6	$ 84.7	$ 70.8
Cash used in investing activities		—	—
Cash flows from financing activities:			
Proceeds from issuance of common stock and exercise of stock options	18.7	21.9	22.9
Dividends to shareholders	(77.8)	(69.8)	(57.6)
Treasury stock purchased	(32.5)	(36.8)	(36.1)
Cash used in financing activities	(91.6)	(84.7)	(70.8)
Net change in cash and cash equivalents	—	—	—
Cash and cash equivalents, beginning of period	—	—	—
Cash and cash equivalents, end of period	$ —	$ —	$ —

See accompanying notes to condensed financial statements.

Schedule I —Condensed Financial Information of TransUnion

TRANSUNION
Parent Company Only
Notes to Financial Statements

Note 1. Basis of Presentation

In the TransUnion parent company only financial statements, the Company's investment in subsidiaries is stated at cost plus equity in the undistributed earnings of subsidiaries since the date of acquisition. The Company's share of net income of its subsidiaries is included in consolidated income using the equity method. The parent company only financial information should be read in conjunction with TransUnion's consolidated financial statements.

Note 2. Income tax

TransUnion entered into an intercompany tax allocation agreement with TransUnion Intermediate Holdings, Inc. in 2013, effective for all taxable periods from May 1, 2012, forward, in which they are members of the same consolidated federal or state tax groups. The agreement allocates the consolidated tax liability from those filings among the various members of the group.

Note 3. Dividends to Stockholders

The dividend rate was $0.105 per share in the third and fourth quarters of 2022, $0.095 per share per quarter from the second quarter 2021 to the second quarter 2022 and $0.075 per share per quarter from the first quarter 2020 to the first quarter 2021. During 2022, 2021 and 2020, we paid dividends of $77.8 million, $69.8 million and $57.6 million, respectively. Dividends declared accrue to outstanding restricted stock units and are paid to employees as dividend equivalents when the restricted stock units vest.

Schedule II—Valuation and Qualifying Accounts

TRANSUNION

(in millions)	Balance at Beginning of Year	Charged to Costs and Expenses	Charged to Other Accounts	Deductions	Balance at End of Year
Allowance for deferred tax assets:					
Year ended December 31,					
2022	$ 70.8	$ 21.8	$ 9.7	$ (3.4)	$ 98.9
2021	$ 65.7	$ 3.8	$ 14.4	$ (13.1)	$ 70.8
2020	$ 53.3	$ 12.6	$ 3.7	$ (3.8)	$ 65.7

As a result of displaying amounts in millions, rounding differences may exist in the table above.