UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

☒ **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 0-24531



CoStar Group, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**52-2091509**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification No.)*

1331 L Street, NW
Washington, DC 20005

(Address of principal executive offices) (zip code)

(202) 346-6500
(Registrant's telephone number, including area code)

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

Title of each class	**Trading Symbol**	**Name of each exchange on which registered**
Common Stock ($0.01 par value)	CSGP	Nasdaq Global Select Market

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 x No o

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 o No x

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 x No o

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

Yes x No o

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	x	Accelerated filer	o
Non-accelerated filer	o	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.

o

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.

x

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

Yes ☐ No x

As of June 30, 2022, the aggregate market value of the common stock (based upon the closing price of the stock on the Nasdaq Global Select Market) of the registrant held by non-affiliates was approximately $23.7 billion. As of February 17, 2023, 406,772,431 shares of common stock were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement, which is expected to be filed with the Securities and Exchange Commission within 120 days after the end of the registrant's fiscal year ended December 31, 2022 are incorporated by reference into Part III of this Report.

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Glossary of Terms

The following abbreviations or acronyms used in this Annual Report on Form 10-K (this "Report") are defined below:

Abbreviation or Acronym	Definition
2020 Credit Agreement	The second amended and restated credit agreement, which amended and restated in its entirety the then-existing credit agreement originally entered into on April 1, 2014 and amended and restated on July 1, 2020
ACH	Automated Clearing House
ADR	Average daily rate
ARS	Auction rate securities
ASC	Accounting Standards Codification
ASU	Accounting Standards Update
Brexit	The June 23, 2016 U.K. referendum in which British citizens approved an exit from the E.U.
BureauxLocaux	The legal entity, Comreal Info, a French *société par actions simplifiée*, the owner and operator of BureauxLocaux, a commercial real estate digital marketplace, in France
BureauxLocaux Acquisition	CoStar UK's acquisition of BureauxLocaux completed on October 1, 2021 pursuant to a Share Sale and Purchase Agreement dated October 1, 2021 between CoStar UK, M.A.J.E. Marketing & Strategie and an individual
Business Immo	The legal entity BIH, a French *société par actions simplifiée*, the owner and operator of Business Immo, a leading commercial real estate news service provider in France
Business Immo Acquisition	CoStar UK's acquisition of the issued share capital of Business Immo on April 5, 2022
CAN-SPAM Act	Controlling the Assault of Non-Solicited Pornography and Marketing Act
CCPA	California Consumer Privacy Act
CECL	Current expected credit losses
CMBS	Commercial mortgage-based securities
Confidential Information	Information about customers, employees, contractors, suppliers, vendors, and others such as landlords and tenants, including personal information such as names, addresses, phone numbers, email addresses, credit card information, biometric data, sensitive or confidential transaction and account information, social security numbers, birthdates and financial information (for example, to facilitate the apartment rental application and payment process between a renter and property manager), as well as a broad range of proprietary and confidential business information, collectively
CoStar Group	The legal entity, CoStar Group, Inc., a Delaware corporation, one or more if its consolidated subsidiaries or operating segments, or the entirety of CoStar Group, Inc. and its consolidated subsidiaries
CoStar UK	The legal entity, CoStar UK Limited, a wholly owned subsidiary CoStar Group
Covenant Suspension Period	A period of time defined in the 2020 Credit Agreement in which we maintain a corporate investment grade rating from any two of Standard & Poor’s Rating Services, Fitch Ratings, Inc. or Moody’s Investors Services, Inc. and no event of default is continuing
CPA	Colorado Privacy Act
CPRA	The California Privacy Rights Act
CRI	CoStar Realty Information, Inc., a Delaware corporation and wholly owned subsidiary of CoStar Group, Inc.
DSUs	Deferred Stock Units
E.U.	European Union
EBITDA	Net income before interest and other income (expense), income taxes, depreciation and amortization
ESG	Environmental, Social and Governance

Abbreviation or Acronym	Definition
ESPP	Employee Stock Purchase Plan
EURIBOR	Euro Interbank Offered Rate
FASB	Financial Accounting Standards Board
FCRA	Fair Credit Reporting Act
FTC	Federal Trade Commission
GAAP	Generally accepted accounting principles in the U.S.
GDPR	General Data Protection Regulation
GILTI	Global intangible low taxed income inclusion
GPP Plan	A U.K. Group Personal Pension Plan
Homes.com	A homes for sale listings site
Homes Group	The legal entity Homes Group, LLC
Homes.com Acquisition	CRI's acquisition of Homes.com completed on May 24, 2021 pursuant to a securities purchase agreement dated April 14, 2021 between Landmark, Homes Group, LLC and CRI
Homesnap	Homesnap is an online and mobile software platform that provides residential real estate professionals access to applications that manage residential real estate agent workflow and marketing campaigns delivered on third-party platforms acquired in the Homesnap Acquisition
Homesnap, Inc.	The legal entity Homesnap, Inc., a Delaware corporation
Homesnap Acquisition	CRI's acquisition of Homesnap completed on December 22, 2020, pursuant to an Agreement and Plan of Merger dated November 20, 2020 between CRI, Snapped Halo Merger Sub Corp., a Delaware corporation and wholly-owned subsidiary of CRI, and Homesnap, Inc., a Delaware corporation. Snapped Halo Merger Sub Corp. was merged with and into Homesnap, Inc., with Homesnap, Inc. surviving the merger as a wholly-owned subsidiary of CRI
ILS	Internet listings services
IRA	The Inflation Reduction Act of 2022
IT Systems	Information technology networks, systems and infrastructure to process, transmit and store electronic information and to communicate among our locations around the world and with our clients and vendors, collectively
Land.com Network	Our network of sites featuring rural lands for sale including: LandsofAmerica, LandAndFarm and LandWatch
Landmark	Landmark Media Enterprises, LLC
LIBOR	London Interbank Offered Rate
Matching RSUs	Awards of matching restricted stock units awarded under the Company's Management Stock Purchase Plan
MSPP	Management Stock Purchase Plan
RentPath	RentPath Holdings, Inc.
RevPAR	Revenue per available room
ROU	Right-of-use
RRSP	A Canadian registered retirement savings plan
SEC	U.S. Securities and Exchange Commission
Securities Act	Securities Act of 1933, as amended
SEM	Search Engine Marketing
Senior Notes	2.800% notes issued by CoStar Group, Inc. due July 15, 2030
SEO	Search Engine Optimization
SOFR	Secured Overnight Financing Rate
TCPA	Telephone Consumer Protection Act (as implemented by the Telemarketing Sales Rule)
Ten-X	The legal entity Ten-X Holding Company, Inc. and its directly and indirectly owned subsidiaries

Abbreviation or Acronym	Definition
Ten-X Acquisition	CRI's acquisition of Ten-X completed on June 24, 2020, pursuant to an Agreement and Plan of Merger dated May 13, 2020 between CRI, Crescendo Sub, Inc, and Ten-X
TSR	Total shareholder return
U.K.	The United Kingdom of Great Britain and Northern Ireland
U.S.	The United States of America
UCPA	Utah Consumer Privacy Act
VCDPA	Virginia Consumer Data Protection Act

Cautionary Statement Concerning Forward-Looking Statements

We have made forward-looking statements in this Report and make forward-looking statements in our other reports filed with the SEC, press releases and conference calls that are subject to risks and uncertainties. Forward-looking statements include information that is not purely historic fact and include, without limitation, statements concerning our financial outlook for 2023 and beyond, our possible or assumed future results of operations generally and other statements and information regarding assumptions or expectations about our revenues, revenue growth rates, gross margin percentage, net income, net income per share, fully diluted net income per share, EBITDA, adjusted EBITDA, adjusted EBITDA margin, non-GAAP net income, non-GAAP net income per diluted share, weighted-average outstanding shares, cash flow from operating activities, operating costs, capital and other expenditures, key priorities for 2023, trends in customer behavior, the current and future impacts of COVID-19 on global economic conditions, the real estate industry, or our customers, legal proceedings and claims, legal costs, effective tax rate, product development and release, the anticipated benefits of completed or proposed acquisitions, the anticipated timing of acquisition closings and integrations, the anticipated benefits of cross-selling efforts, geographic and product expansion, planned service enhancements, expansion and development of our sales forces, planned sales and marketing activities and investments, investments in residential marketplace services and our residential marketplace strategy, the impact or results of sales and marketing initiatives, product integrations, elimination and de-emphasizing of services, net new sales, contract renewal rates, use of proceeds from equity and debt offerings, the use of proceeds of any draws under our $750 million credit facility provided in the 2020 Credit Agreement, expectations regarding our compliance with financial and restrictive covenants in the 2020 Credit Agreement, employee relations, management's plans, goals and objectives for future operations, sources and adequacy of liquidity and growth and markets for our stock. Sections of this Report that contain forward-looking statements include "Business," "Risk Factors," "Properties," "Legal Proceedings," "Management's Discussion and Analysis of Financial Condition and Results of Operations," "Quantitative and Qualitative Disclosures About Market Risk," "Controls and Procedures" and the Consolidated Financial Statements and related Notes.

Our forward-looking statements are also identified by words such as "hope," "anticipate," "may," "believe," "expect," "intend," "will," "should," "plan," "estimate," "predict," "continue" and "potential" or the negative of these terms or other comparable terminology. You should understand that these forward-looking statements are estimates reflecting our judgment, beliefs and expectations, not guarantees of future performance. They are subject to a number of assumptions, risks and uncertainties that could cause actual results to differ materially from those expressed or implied in the forward-looking statements. The following important factors, in addition to those discussed or referred to under the heading "Risk Factors," and other unforeseen events or circumstances, could affect our future results and could cause those results or other outcomes to differ materially from those expressed or implied in our forward-looking statements:

- our inability to attract and retain new clients;
- our inability to successfully develop and introduce new or updated information, analytics and online marketplace services;
- our inability to compete successfully against existing or future competitors in attracting advertisers and in general;
- competition;
- the effects of fluctuations and market cyclicality;
- the effects of global economic uncertainties and downturns or a downturn or consolidation in the real estate industry;
- our inability to hire qualified persons for, or retain and continue to develop, our sales force, or unproductivity of our sales force;
- our inability to retain and attract highly capable management and operating personnel;
- the downward pressure that our internal and external investments may place on our operating margins;
- our inability in increasing brand awareness;
- our inability to maintain or increase internet traffic to our marketplaces;
- our inability to attract new advertisers;
- our inability to successfully identify, finance, integrate and/or manage costs related to acquisitions;
- the effects of cyberattacks and security vulnerabilities, and technical problems or disruptions;
- the risks related to a large infrastructure project to build out our campus in Richmond, Virginia;
- our inability to generate increased revenues from our current or future geographic expansion plans;
- the effects of and uncertainty surrounding the COVID-19 pandemic and its effect on the global economy and the real estate industry;
- the risks related to acceptance of credit cards and debit cards and facilitation of other customer payments;
- the effects of climate change and other events beyond our control;
- the effects related to increased attention to ESG matters;
- our inability to obtain and maintain accurate, comprehensive or reliable data;

- our ability to enforce or defend our ownership and use of intellectual property;
- our inability to successfully halt the operation of websites that aggregate our data, data from other companies or "copycat" websites that may misappropriate our data;
- our inability to defend against potential legal liability for collecting, displaying or distributing information;
- our inability to obtain or retain listings from real estate brokers, agents, property owners and apartment property managers;
- the risks related to international operations;
- the effects of foreign currency fluctuations;
- the effects of Brexit;
- our indebtedness;
- the effects of a lowering or withdrawal of the ratings assigned to our debt securities by rating agencies;
- the effects of any actual or perceived failure to comply with privacy or data protection laws, regulations or standards;
- the effects of changes in tax laws, regulations or fiscal and tax policies;
- the effects of third-party claims, litigation, regulatory proceedings or government investigations; and
- risks related to return on investment.

Accordingly, you should not place undue reliance on forward-looking statements, which speak only as of, and are based on information available to us on, the date of this Report. All subsequent written and oral forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. We do not undertake any obligation to update any such statements or release publicly any revisions to these forward-looking statements to reflect new information or events or circumstances after the date of this Report or to reflect the occurrence of unanticipated events.

PART I

Item 1. Business

In this Report, the words "we," "our," "us," "CoStar Group" or the "Company" refer to CoStar Group, Inc. and its direct and indirect wholly owned subsidiaries. This Report also refers to our websites, but information contained on those sites is not part of this Report.

CoStar Group, founded in 1987, is a leading provider of online real estate marketplaces, information and analytics in the U.S. and U.K. based on the fact that we own and operate leading online marketplaces for commercial real estate and apartment listings in the U.S., based on the numbers of unique visitors and site visits per month; provide more information, analytics and marketing services than any of our competitors; offer the most comprehensive commercial real estate database available; and have the largest commercial real estate research department in the industry. We have created and compiled a standardized platform of information, analytics and online marketplace services where industry professionals and consumers of commercial real estate, including apartments, and the related business communities, can continuously interact and facilitate transactions by efficiently accessing and exchanging accurate and standardized real estate-related information. Our service offerings span all commercial property types, including office, retail, industrial, multifamily, commercial land, mixed-use and hospitality. With our acquisitions of Homesnap and Homes.com, we also offer online platforms that manage workflow and marketing for residential real estate agents and brokers and provide a portal for homebuyers to view residential property listings.

Industry Overview

The market for real estate information and analysis is vast, based on the variety, volume and value of transactions related to real estate. Each transaction has multiple participants and multiple information requirements, and in order to facilitate transactions, industry participants must have extensive, accurate and current information and analysis. Members of the real estate and related business community require daily access to current data such as space availability, properties for-sale, rental units available, rental rates, vacancy rates, tenant movements, comparable sales, supply, new construction, absorption rates and other important market developments to carry out their businesses effectively. Market research (including historical and forecast conditions) and applied analytics are instrumental to the success of industry participants. There is a strong need for an efficient marketplace, where real estate professionals can exchange information, evaluate opportunities using standardized data and interpretive analyses and interact with each other on a continuous basis.

A large number of parties involved in commercial and residential real estate and the related business community make use of the services we provide in order to obtain information they need to conduct their businesses, including:

- Sales and leasing brokers
- Property owners
- Property managers
- Design and construction professionals
- Real estate developers
- Real estate investment trust managers
- Investment and commercial bankers
- Mortgage bankers
- Mortgage brokers
- Retailers
- Hospitality owners
- Real estate agents
- Government agencies
- Mortgage-backed security issuers
- Appraisers
- Pension fund managers
- Reporters
- Tenant vendors
- Building services vendors
- Communications providers
- Insurance companies' managers
- Institutional advisors
- Investors and asset managers

The commercial real estate and related business community historically operated in an inefficient marketplace because of the fragmented approach to gathering and exchanging information within the marketplace. Various organizations, including hundreds of brokerage firms, directory publishers and local research companies, collected data on specific markets and developed software to analyze the information they independently gathered. This highly fragmented methodology resulted in duplication of efforts in the collection and analysis of information, excessive internal cost and the creation of non-standardized data containing varying degrees of accuracy and comprehensiveness, resulting in a formidable information gap.

The creation and maintenance of a standardized information platform for commercial real estate requires infrastructure including a standardized database, accurate and comprehensive research capabilities, experienced analysts, easy-to-use technology and intensive participant interaction. By combining our extensive database, researchers, our experienced team of analysts and economists, technological expertise and broad customer base, we believe that we have created such a platform.

The apartment rental advertising industry serves property managers and owners who are tasked with finding renters to occupy vacant apartments, as well as renters who are searching for their next home. Property managers have several options at their disposal, including their own websites, drive-by and outdoor advertising, traditional classified ads, free online listing services, search engine marketing and ILS, like Apartments.com and the network of apartment listing websites we own and operate. Many apartment ILS websites feature only the rental availabilities that larger property owners pay to advertise, resulting in a poor user experience in which the renter's search criteria return either limited or no results, irrelevant results or stale results that do not represent actual availabilities.

We believe that consumers expect accurate, actionable and comprehensive apartment rental information. Our apartment ILS websites include renter-focused features like the ability to filter search results according to various criteria (e.g., commute time to work); professional images of the properties, including immersive videos and 3-D interactive models; custom neighborhood profiles; and tenant reviews. Our network of apartment listing websites draws on our multifamily database and includes researched and verified information. We proactively gather information on available rentals to improve the accuracy of the listings on our apartment ILS websites, including real time unit-level availability, current pricing and rent specials. We have continually invested in our network to improve the features and services offered to property managers and website users. Recent additions include: dynamic lead forms that provide more information about prospective residents, making rent trends information publicly available, free digital ad retargeting and integrated online rental solutions, including lease applications with tenant credit and background checks. We believe that we have created and maintain easily searchable apartment ILS websites with a comprehensive selection of rentals, information on actual rental availabilities and rents and in-depth data on neighborhoods, as well as easy to use and actionable tools for the rental process.

We believe that consumers expect accurate, actionable and comprehensive homes for sale information on a platform that allows collaboration between homebuyers and agents. Our residential websites include homebuyer-focused features like the ability to filter search results according to various criteria (e.g., home features, view and lot type), review rankings of nearby schools and tools to educate consumers on the home buying process. We plan to develop original, media-rich content of neighborhoods, schools, parks and condominium buildings' amenities and common areas to supplement information in agent listings. We are designing tools to facilitate collaboration between homebuyers and agents.

Strategy

Our strategy is to provide real estate industry professionals and consumers with critical knowledge to explore and complete transactions by offering the most comprehensive, timely and standardized information on real estate and the right tools to be able to effectively utilize that information. Over time, we have expanded, and we continue to expand, our services for real estate information, analytics and online marketplaces in an effort to continue to meet the needs of the industry as it grows and evolves.

Our standardized platform includes the most comprehensive proprietary database of commercial real estate information in the industry; the largest research department in the commercial real estate industry; proprietary data collection, information management and quality control systems; a large in-house product development team; a broad suite of web-based information, analytics and online marketplace services; a large team of analysts and economists; risk management tools; and a large, diverse base of clients. Our database has been developed and enhanced for more than 35 years by a research department that makes daily database updates. In addition to our internal efforts to grow the database, we have obtained and assimilated a number of proprietary databases. Our comprehensive commercial real estate database powers our information services, sources data used in our analytic services and provides content for most of our online marketplace services and our auction platform. Our ability to utilize the same commercial real estate information across our standardized platform creates efficiencies in operations and improves data quality for our customers.

We deliver our comprehensive commercial real estate information content to our customers primarily via an integrated solution of online service offerings that includes information about space available for-lease, comparable sales information, information about properties for-sale, tenant information, internet marketing services, risk management tools, analytical capabilities, information for clients' websites, information about industry professionals and their business relationships, data integration and industry news. We also operate complementary online marketplaces for commercial and residential real estate listings and apartment rentals, as well as a commercial real estate auction platform. We strive to cross-sell our services to our customers in order to best suit their needs.

We manage and report our business geographically in two operating segments, with our primary areas of measurement and decision-making being North America, which includes the U.S. and Canada, and International, which primarily includes Europe, Asia-Pacific and Latin America. Information about our revenues, long-lived assets and total assets derived from and located in foreign countries is included in Notes 2, 3 and 14 of the Notes to the Consolidated Financial Statements included in this Report. Revenues, EBITDA and total assets and liabilities for each of our segments are set forth in Notes 3 and 14 of the Notes to the Consolidated Financial Statements. Information about risks associated with our foreign operations is included in "Item 1A. Risk Factors" and "Item 7A. Quantitative and Qualitative Disclosures about Market Risk" in this Report.

CoStar's Comprehensive Database

We have spent more than 35 years building and acquiring databases of commercial real estate information, which includes information on properties, leasing, sales, comparable sales, tenants and demand statistics, as well as digital images, drone videos and 3-D tours. This highly complex database is comprised of hundreds of data fields, tracking such categories as location, site and zoning information, building characteristics, space and unit characteristics and availability, tax assessments, true ownership, sales and lease comparables, multi-family rents, vacancies and concessions, space requirements, retail locations, mortgage and deed information, for-sale and for-lease listings, fund data, income and expense histories, tenant names, tenant credit scores, view of company locations, lease expirations, contact information, historical trends, forecasts and demographic information. The database also includes building photographs, aerial photographs and videos, 3-D virtual tours, plat maps and floor plans.

CoStar Research

Research Department. Our research professionals undergo an extensive training program so that we can maintain consistent research methods and processes throughout our research department. Our researchers collect and analyze commercial real estate information through phone calls, e-mails and additional research methods including field inspections, public records review, news monitoring, third-party data feeds and user entered content. We have also set up direct feeds from larger apartment sites, owners and brokers, and have put in place an automated system that compiles information sourced from the internet in order to provide the most up-to-date information.

Our researchers are responsible for maintaining the accuracy and reliability of our database information, training our clients to use CoStar Group products and handling their customer service questions, creating a "one touch" approach to customer care. Because of the importance commercial real estate professionals place on our data and our prominent position in the industry, many of these professionals routinely take the initiative and to proactively report available space and transactions through our online tool, which we refer to as our Marketing Center, or directly to our researchers.

Our field research efforts include physical inspections of properties in order to research new availabilities, find additional property inventory, identify new construction, collect tenant information, verify existing information, photograph properties and create high quality videos of interior spaces (including walk-through videos and 3-D virtual tours), amenities and exterior features of properties. Our field researchers are equipped with high resolution digital cameras and handheld laser instruments to precisely measure buildings and geo-code and position them on digital maps. A typical site inspection of a commercial property consists of photographing the building, capturing interior images, videos and 3-D tours, measuring the building, geo-coding the building, capturing "for-sale" or "for-lease" sign information, counting parking spaces, assessing property condition and construction and gathering tenant information. Field researchers also canvass properties, collecting tenant data suite-by-suite. We also utilize a low-flying airplane and a fleet of drones to conduct aerial research of commercial real estate. We place researchers on the low-flying aircraft to scout new commercial developments and take aerial photographs and videos. Our U.S. drone operators are Federal Aviation Administration certified and trained to capture aerial photographs and videos. Our drone operators in the U.K. and Canada are certified and trained to Civil Aviation Authority and Transport Canada, with a permission for commercial operations pending, respectively.

We are leveraging our capabilities developed from our extensive commercial real estate research efforts to produce original, media rich content of neighborhoods, schools, parks and condominium buildings' amenities and common areas for our residential products using professional photographers and fleets of drones to conduct aerial research of residential real estate.

Data and Image Providers. We license a small portion of our data and images from public record providers and third-party data sources. Licensing agreements with these entities allow us to use a variety of commercial real estate information, including property ownership, tenant information, demographic information, maps, aerial photographs and 3-D virtual apartment tours of apartment communities, all of which enhance our services. These license agreements generally grant us a non-exclusive license to use the data and images in the creation and supplementation of our information, analytics and online marketplaces.

Management and Quality Control Systems. Our research processes include automated and non-automated controls to ensure the integrity of the data collection process. A large number of automated data quality tests check for potential errors, including occupancy date conflicts, available square footage greater than building area, typical floor space greater than building area and expired leases. We also monitor changes to critical fields of information to ensure all information is kept in compliance with our standard definitions and methodology. Our non-automated quality control procedures include:

- Calling our information sources on recently updated properties to re-verify information;
- Reviewing recorded or live listen phone calls (in states where applicable) to ensure information was properly sourced and correctly captured;
- Performing periodic research audits and field checks to determine if we correctly canvassed buildings;
- Providing training and retraining to our research professionals to ensure accurate and standardized data compilation; and
- Compiling measurable performance metrics for research teams and managers for feedback on data quality.

Finally, one of the most important and effective quality control measures we rely on is feedback provided by the commercial real estate professionals using our data every day.

Services

Our portfolio of information, analytics and online marketplaces is branded and marketed to our customers and marketplace end users under the primary brands of CoStar®, STR®, Apartments.com™, LoopNet®, Homes.com®, Homesnap®, Ten-X®, BizBuySell® and Land.com™. Our services are accessible via the internet and through our mobile applications. Our services are primarily derived from a database of building-specific information and offer customers specialized tools for accessing, analyzing and using our information. Over time, we have enhanced and expanded, and we expect to continue to enhance and expand, our existing information, analytics and online marketplace services. We have developed and we expect to continue to develop additional services leveraging our database to meet the needs of our existing customers as well as potential new categories of customers.

Our principal information, analytics and online marketplace services are described in the following paragraphs:

CoStar

CoStar is our subscription-based integrated platform for commercial real estate intelligence, which includes information about office, industrial, retail, multifamily, hospitality and student housing properties, properties for sale, comparable sales,

tenants, space available for lease, industry professionals and their business relationships, industry news and market status and provides lease analysis, risk management, and hospitality benchmarking capabilities. CoStar is our largest service offering in our North America and International operating segments and contains the following tools and features.

- *Properties* provides a comprehensive inventory of office, industrial, retail, multifamily, hospitality and student housing properties and land. We also provide for-lease and for-sale listings, historical data, property analytics, building photographs, demographics, maps and floor plans. Commercial real estate professionals use this tool to identify available space for-lease, evaluate leasing and sale opportunities, value assets and position properties in the marketplace. Our clients also use this feature to analyze market conditions by calculating current vacancy rates, absorption rates or average rental rates, and forecasting future trends based on user-selected variables with powerful map-based search and reporting capabilities.

- *Leasing* provides subscribers with comprehensive data on CoStar researched lease transactions and a software tool to capture, manage and maintain their own user-entered lease data, and provides subscribers the ability to analyze this combined lease dataset from an aggregate analytic perspective and generate various reports. In addition, subscribers can incorporate their own data to perform in-depth lease analyses and share those analyses with other subscribers or non-subscribers. This tool can be used to produce an understandable cash flow analysis as well as key metrics about any proposed or existing lease. It combines financial modeling with CoStar’s comprehensive property information, enabling the subscriber to compare lease alternatives, either from a landlord or tenant perspective.

- *Sales* is a robust database of commercial real estate sales transactions and is designed for professionals who need to research property comparables, identify market trends, expedite the appraisal process and support property valuations. This feature offers subscribers numerous fields of property information, access to support documents (e.g., deeds of trust) for new comparables, demographics and the ability to view for-sale properties alongside sold properties plotted on a map, aerial image or in a table format.

- *Tenants* is a detailed online business-to-business prospecting and analytics tool providing commercial real estate professionals with the most comprehensive commercial real estate-related tenant information available in our North American markets. CoStar Tenant profiles tenants occupying space in commercial buildings and provides updates on lease expirations - one of the service’s key features - as well as occupancy levels, growth rates and numerous other facts. This allows users to target prospective clients quickly through a searchable database that identifies only those tenants meeting certain criteria.

- *Market Analytics* provides owners, investors, brokers, property managers, lenders, appraisers and other commercial real estate professionals the ability to view and report on aggregated market and submarket trends, including leasing, vacancy, rental rates, construction, investment sales activity and overall economic conditions that affect commercial real estate markets. Market Analytics covers all major real estate sectors including office, industrial, retail, multifamily, hospitality and student housing, and provides quantitatively driven and economist curated forecasts of supply, demand, vacancy and rent at the submarket level, and job growth and asset pricing at the market level.

- *Public Record* provides access to a searchable database of commercially-zoned parcels in the U.S. Users can search for property attributes and sale transaction, loan, lien and tax assessment information. Information in this module is sourced from numerous counties and jurisdictions that provide this data for ownership, title and property tax assessment purposes.

- *Lender* provides lenders the tools to manage their loan portfolio and risk. These tools automatically connect the user's portfolio to CoStar's research, market analytics and proprietary COMPASS credit default model, as well as their own data sets, to enable portfolio surveillance, concentration risk monitoring, stress testing and expected credit loss modeling and to support loan originations and underwriting.

Information Services

We provide real estate and lease management technology solutions, including lease administration, lease accounting and abstraction services, through our CoStar Real Estate Manager® service offerings, as well as portfolio and debt analysis, management and reporting capabilities through our CoStar Risk Analytics® service offerings. We also provide benchmarking and analytics for the hospitality industry both on a subscription basis and an ad hoc basis. We earn revenue on ad hoc transactions as reports or data are delivered to the customer. We provide information services internationally, through our Business Immo, Belbex and Thomas Daily businesses in France, Spain and Germany, respectively.

- *CoStar Real Estate Manager* is a real estate lease administration, portfolio management and lease accounting compliance software solution designed for corporate real estate managers, company executives, financial accounting directors, business unit directors, brokers and project managers. CoStar Real Estate Manager helps users connect real estate initiatives with company strategic goals, streamline portfolio operations, reduce occupancy costs with analytics that track location performance against targets and maximize location performance through proactive portfolio management. Additionally, the software is used to help companies manage their lease accounting compliance and reporting requirements.

- *CoStar Risk Analytics* is a trusted partner to many of the largest commercial real estate lenders and CMBS market participants, providing timely data, advanced analytics, time-proven models and extensive experience to support regulatory examinations, risk management and strategic decision making. CoStar Risk Analytics' COMPASS credit default model has been used by commercial real estate lenders, CMBS participants and regulators for over 15 years to estimate required loss reserves, stress test portfolios, generate risk ratings, calculate capital adequacy, underwrite loans, target lending opportunities and price CMBS bonds. Our clients rely on CoStar Risk Analytics for model validations and reporting to support regulatory examinations. Additionally, CoStar Risk Analytics solutions connect client loan and CMBS loan portfolios to CoStar’s industry-leading commercial real estate data, research, analytics and the COMPASS credit model, updated daily, for more informed decision making, portfolio strategy and surveillance. Clients of CoStar Risk Analytics solutions include many of the largest banks, life insurance companies, asset managers, hedge funds, government agencies and regulators.

- *STAR™* Reports provide hospitality benchmarking, measuring a hotel’s performance against a self-selected aggregated competitive set. These confidential data reports enable customers to understand their market position based on trends and indices. Reports are provided on a monthly, weekly or daily basis, and provide insights about key metrics such as occupancy, ADR and RevPAR. STAR Reports are only available to industry participants who provide us with data. These participants are typically hotel brands, third-party management companies and owners. We offer ad hoc reports with a customizable data set providing aggregated hotel performance data for a bespoke set of hotels or standardized industry segments (e.g. market or submarket).

Multifamily

Apartments.com™, the flagship brand of our network of apartment marketing sites, provides a variety of ad packages and enhancements that allow property managers and owners to fully showcase their apartment community through increased exposure and interactions that allow renters to view, engage and connect with the community. Apartments.com also provides tools to facilitate the rental process, including online tenant applications with background and credit checks and rental payment processing. The Apartments.com network consists of numerous other apartment marketing sites, including:

- *ApartmentFinder*™ provides lead generation, advertising and internet marketing solutions to property managers and owners through its main site, ApartmentFinder.com.

- *ForRent.com*® provides digital advertising through a network of four multifamily websites, which includes ForRent.com, AFTER55.com®, CorporateHousing.com™ and ForRentUniversity.com®.

- *ApartmentHomeLiving.com*™ provides renters with another national online apartment rental resource that showcases apartments for rent with official prices, pictures, floor plans and detailed information on each apartment.

- *Apartamentos.com*™ provides Spanish speaking renters with an online apartment rentals resource offered exclusively in Spanish, with the same primary features found on Apartments.com.

- *WestsideRentals.com*® specializes in Southern California real estate rentals.

- *Off Campus Partners* provides student housing marketplace content and technology to U.S. universities, simplifying the off-campus housing search process for universities, property managers and students.

Our apartment marketing network of subscription-based advertising services provides property owners, professional property management companies and landlords with a comprehensive advertising destination for their available rental units and offers renters a platform for searching for available rentals. Our apartment marketing network draws on and leverages our multifamily database, which contains detailed information on apartment properties and is designed to meet renter preferences and demands, in order to drive traffic to those sites and attract advertisers who prefer to advertise on heavily trafficked apartment websites. Our network of apartment marketing sites provides a comprehensive selection of rentals, information on actual availabilities and rents and in-depth data on neighborhoods, including restaurants, nightlife, history, schools and other facts important to renters. To help renters find the information that meets their needs, our sites also offer innovative search tools such as the Polygon™ Search tool, which allow renters to specifically define the area in which they want to find an apartment and Plan Commute tools, which allow renters to search property listings that meet their transportation needs. We also offer complementary services to the rental industry, including the ability for renters to apply for rentals online and for landlords to receive applications, screen tenants and process rental payments and lease renewals.

LoopNet

LoopNet is the flagship brand in our network of commercial real estate marketing sites, which also includes CityFeet.com® and Showcase.com®. Our LoopNet online marketplace enables commercial property owners, landlords and real estate brokers working on their behalf to advertise properties for-sale or for-lease and to submit detailed information about property listings. Commercial real estate brokers, buyers and tenants use LoopNet extensively to search for available property listings that meet their criteria. LoopNet offers unique, subscription-based advertising solutions for different segments within the industry and delivers value across its constituent networks. The LoopNet network leverages CoStar Group’s commercial real estate database to provide in-depth and accurate information across all commercial property types, including office, industrial, retail, multifamily, specialty, health-care, hospitality, sports and entertainment, land and residential. Investors and tenants are also able to consume industry news developed by our in-house editorial team.

LoopNet Premium Lister® is designed for commercial real estate professionals and other customers who seek the broadest possible exposure for their listings, access to leads lists and advanced marketing and searching tools. LoopNet Premium Lister provides subscribers with the ability to market their listings to all LoopNet.com visitors, as well as numerous other features. LoopNet Premium Lister is available for a quarterly or annual subscription.

LoopNet Diamond, Platinum and Gold Ads are designed for commercial real estate professionals and other customers who seek the broadest possible exposure for their listings, access to leads lists and advanced marketing and searching tools. These LoopNet Ads provide subscribers with full access to our LoopNet network as well as retargeting across a network of prominent sites including the Wall Street Journal, Forbes and Bloomberg. LoopNet Ads are available for a six-month or annual subscription.

Our international subscription-based online marketplaces are Loopnet.co.uk in the U.K., BureauxLocaux in France and Belbex.com in Spain. These marketplaces provide listings of commercial properties for rent and for sale ranging from traditional offices, serviced offices, co-working spaces, hot-desks, retail locations, industrial units, leisure, hotels and warehousing.

Residential

The acquisitions of Homes.com and Homesnap enabled us to expand our offerings to the residential for sale market. Homes.com is a homes for sale listings site. Homesnap is an online and mobile software platform that provides residential real estate professionals subscription-based access to applications that manage residential real estate agent workflow and marketing campaigns delivered on third-party platforms. Homesnap also provides a custom version of its platform, branded as Citysnap™, specifically for the five boroughs of New York City in conjunction with the Real Estate Board of New York's Residential Listing Service. Our residential team is creating new and improved tools to help agents promote their residential listings, connect with buyers and sellers and streamline their daily workflow. Homesnap also receives transaction-based revenue for short-term advertising delivered on third-party platforms.

Other Marketplaces

Ten-X operates an online auction platform for commercial real estate. Our platform provides brokers, sellers, and buyers access to data-driven technology and marketing tools to expand market visibility and decrease time to close. The platform allows brokers and sellers to onboard assets, evaluate the results of complimentary marketing campaigns and follow up on pre-qualified leads. Buyers can search for properties that meet their investment goals and are given access to market analysis and due diligence documents.

Land.com is the flagship brand in our network of marketplaces for rural lands for-sale sites, which also includes *LandsofAmerica*™, *LandAndFarm*™ and *LandWatch*®. Sellers pay a fee to list their land for-sale, and interested buyers can search the respective sites' listings.

BizBuySell is the flagship brand in our network of marketplaces for operating businesses and franchises for-sale, which also includes *BizQuest* and *FindaFranchise*. Business sellers pay a fee to list their operating businesses for-sale, and interested buyers can search the respective sites' listings for free. The BizBuySell, BizQuest and FindaFranchise Franchise Directories allow interested business buyers to search hundreds of franchise opportunities, and franchisors can list their availabilities in the directory on a cost per lead basis.

We also provide other services that complement those offered by our primary brands. These include: real estate and lease management technology solutions, lease administration, transaction and project management and lease accounting, through our CoStar Real Estate Manager service offerings; market research, consulting and analysis, portfolio and debt analysis and management and reporting capabilities through our CoStar Investment Analysis and CoStar Risk Analytics service offerings; and benchmarking and analytics for the hospitality industry through our STR offerings.

Our services are typically distributed to our clients under subscription-based license agreements that typically renew automatically, a majority of which have a term of at least one year. Upon renewal, many of the subscription contract rates may change in accordance with contract provisions or as a result of contract renegotiations. To encourage clients to use our services regularly, we generally charge a fixed monthly amount for our subscription-based services rather than charging fees based on actual platform usage or number of paid clicks. Depending on the type of service, contract rates are generally based on the number of sites, number of users, organization size, the client's business focus, the client's geographic location, the number and types of services to which a client subscribes, the number of properties a client advertises and the prominence and placement of a client's advertised properties in the search results. Our subscription clients generally pay contract fees on a monthly basis, but in some cases may pay us on a quarterly or annual basis. Our transaction-based services primarily consist of auction fees from our Ten-X online auction platform for commercial real estate, which are generally calculated as a percentage of the final sales price for the commercial real estate property sold and recognized as revenue upon the successful closure of an auction. We generally see higher sales of Apartments.com listing services during the peak summer rental season and higher CoStar sales towards the end of the year; however, sales fluctuate from year-to-year and revenue is not generally seasonal because our services are typically sold on a subscription basis.

Clients

We draw clients from across the real estate and related business community, including real estate brokers, agents, owners, developers, landlords, property managers, financial institutions, retailers, vendors, appraisers, investment banks, government agencies and other parties involved in real estate. For the years ended December 31, 2022, 2021 and 2020, no single client accounted for more than 5% of our revenues.

Sales and Marketing

Our overall sales strategy is to provide optimal service to our existing customers, attract new clients and cross-sell the numerous solutions we offer. Our sales teams sell multiple products and are primarily located in field sales offices throughout the U.S., with others in Canada, the U.K., Spain, France and Germany. Our inside sales teams are largely based in Washington, DC and Richmond, Virginia. Our inside sales professionals actively work lead lists, prospect for new customers and perform in-person and virtual product demonstrations to convey the multiple solutions we offer.

Our local offices typically support field sales and field research operations within the markets in which they operate. This enables our clients to benefit from a local presence. Our field sales force has the primary front-line responsibility for customer service, ensuring client satisfaction and building long-term relationships. Our local offices act as hubs for training, sources of market insight, product feedback sessions and connecting industry participants.

We actively manage client accounts with frequent meetings, product trainings and updates on new enhancements to our solutions. In 2022, we successfully implemented a number of important sales initiatives focused on selling our products to brokers, property owners and lenders in the U.S. This focus will continue in 2023.

Our primary marketing methods include: in person and virtual service demonstrations; targeted paid digital marketing; retargeting and social media marketing; direct marketing, such as email; communication via our corporate website, campaign-specific websites and news services; participation in virtual trade shows and industry events; Company-sponsored events; client referrals; content marketing including webinars, seminars and white papers and other product-specific company newsletters distributed via email to our clients and prospects.

Comprehensive digital marketing and direct marketing are effective means for us to find prospective clients. Our digital marketing efforts include SEO, targeted paid advertising with major search engines, social media and display advertising on commercial real estate industry news and business websites and mobile applications and our direct marketing efforts include television, radio, out-of-home ads, direct mail and email and, when applicable, make extensive use of our unique, proprietary database. Once we have identified a prospective client, our most effective sales method is a service demonstration. We use various forms of integrated marketing and advertising to build brand awareness, brand identity and reinforce the value and benefits of our services.

We also sponsor and attend local in person and virtual association activities and events, including events for commercial real estate brokers, residential real estate agents, property owners, investors and retail and financial services institutions, and attend or exhibit at virtual industry trade shows and conferences to reinforce our relationships with our core user groups.

To generate brand awareness and site traffic for the Apartments.com network of rental websites, we utilize a multi-channel marketing campaign featuring television and radio ads, online and digital advertising impressions, streaming audio and podcasts, social media, email, public relations and news articles, out-of-home and paid search marketing, all of which are reinforced with substantial SEO efforts. We plan to continue to utilize these marketing methods to generate brand awareness and site traffic for the Apartments.com network and have implemented similar marketing strategies for LoopNet and Ten-X. To generate brand awareness and site traffic for our residential products, we utilize digital advertising impressions, social media and paid search marketing, all of which are reinforced with SEO efforts. We will continue to work to determine the optimal level of marketing investment for each of these services for future periods.

To encourage clients to use our services regularly, we generally charge a fixed monthly amount for our subscription-based information services rather than fees based on actual system usage. Contract rates for subscription-based services are generally based on the number of sites, number of users, organization size, the client's business focus, geography and the range of subscription services. Our marketing solutions are priced by exposure levels, the number of properties/spaces for-lease, rent or sale and the market in which they are offered. Listings for customers who purchase packages with the highest level of exposure usually appear first in search results and offer the richest media content and engagement opportunities for tenants searching for space, renters looking for an apartment or investors seeking an opportunity. Our subscription clients generally pay contract fees on a monthly basis, but in some cases may pay us on a quarterly or annual basis.

Expansion and Growth

Acquisitions

We have expanded and continue to expand the coverage and depth of our information, analytics and online marketplace services. In addition to organic growth, we have grown our business through strategic acquisitions. We acquired Homes.com, BureauxLocaux and Business Immo in May 2021, October 2021 and April 2022, respectively. We continue to integrate our recent acquisitions and the services they offer into our CoStar network.

See Notes 5 and 9 of the Notes to the Consolidated Financial Statements for further discussion of these acquisitions.

Development, Investments and Expansion

We plan to continue to invest in our business and our services, evaluate strategic growth opportunities and pursue our key priorities as described below in Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations. We are committed to supporting, improving and enhancing our information, analytics and online marketplace solutions, including expanding and improving our offerings for property owners, property managers, brokers, agents, buyers, commercial tenants and residential renters and homebuyers. We expect to continue our software development efforts to improve existing services, introduce new services, integrate and cross-sell services and expand and develop supporting technologies for our research, sales and marketing organizations. We reevaluate our priorities on a regular basis and may reevaluate our priorities as economic conditions continue to evolve.

We evaluate potential changes to our service offerings from time to time in order to better align the services we offer with customers' needs. Further, in some cases, when integrating and coordinating our services and assessing industry and client needs, we may decide to combine, shift focus from, de-emphasize, phase out, or eliminate a service that, among other things, overlaps or is redundant with other services we offer. In the event that we eliminate or phase out particular service offerings, we may experience reduced revenues and earnings. The decision to eliminate or phase out a service offering may also ultimately result in increased revenues and earnings from sales of other services we offer in lieu of the eliminated or phased out services. However, we cannot predict with certainty the amount or timing of any reductions in revenues and earnings or subsequent increases in revenues and earnings, if any, resulting from the elimination or phasing out of any service offering.

We believe that our integration efforts and continued investments in our services, including acquisitions and expansion of our existing service offerings, have created a platform for long-term revenue growth. We expect these investments to result in further penetration of our subscription-based services and the successful cross-selling of our services to customers in existing markets.

We have invested in the expansion and development of our field sales force to support the growth and expansion of our company and our service offering, and plan to continue to invest in, evaluate and strategically position our sales force as we continue to develop and grow. In addition, we continue to invest in marketing our services, as well as in our research operations to support continued growth of our information and analytics offerings to meet the growing content needs of our clients. We plan to continue to utilize multi-channel marketing campaigns and to work to determine the optimal level of marketing investments for our services for future periods. While we believe the investments we make in our business create a platform for growth, those investments may reduce our profitability and adversely affect our near-term financial position.

Proprietary Technology

Our information technology professionals focus on developing new services and features for our customers, improving and maintaining existing services, integrating our current services, securing our comprehensive database of commercial real estate information and delivering research automation tools that improve the quality of our data and increase the efficiency of our research analysts.

Our information technology team is responsible for developing, improving and maintaining our information, analytics and online marketplace services. Our information technology team is also responsible for developing the infrastructure necessary to support our business processes, comprehensive database of commercial real estate information, analytics and online marketplaces and extensive image library. The team implements technologies and systems that introduce efficient workflows and controls designed to increase the production capacity of our research teams and improve the quality of our data. Over the years, the team has developed data collection and quality control mechanisms that we believe are unique within the commercial real estate industry. The team continues to develop and modify our enterprise information management system that integrates our sales, research, field research, customer support and accounting information. We use this system to maintain our commercial real estate research information, manage contacts with the commercial real estate community, provide research workflow automation and conduct daily automated quality assurance checks. In addition, our information technology team has also developed fraud-detection technology to detect and prevent unauthorized access to our services. To supplement the measures we take to prevent misuse of our information, we added state of the art adaptive authentication technology to the login process of our CoStar product.

Our information technology professionals maintain the servers and network components necessary to support our services and research systems. Our core services are delivered from multiple data centers and cloud-based computing platforms to support uninterrupted service for our customers and are continually monitored to ensure fast and reliable customer access, to protect against unauthorized intrusions and to detect vulnerabilities.

Our comprehensive data protection policy provides for use of secure networks, strong passwords and dual factor authentication systems, encrypted data fields, end-to-end encryption, endpoint detection and response systems and services, security information and event management systems, off-site storage, cloud services, end user and developer security training, multilayered anti-phishing malware and spam protections and other protective measures in an effort to ensure the availability and security of all core systems.

Competition

The market for information, analytics and online marketplaces generally is competitive and extremely dynamic. In the commercial real estate, apartment rentals and home for sale industries, we believe the principal competitive factors affecting these services and providers are:

- Quality and depth of the underlying databases;
- Quality and quantity of leads and, for multifamily, leases delivered;
- Ease of use, flexibility and functionality of the software;
- Intuitiveness and appeal of the user interface;
- Timeliness of the data, including listings;
- Breadth of geographic coverage and services offered;
- Completeness and accuracy of content;
- Client service and support;
- Perception that the service offered is the industry standard;
- Price;
- Effectiveness of marketing and sales efforts;
- Proprietary nature of methodologies, databases and technical resources;
- Vendor reputation;
- Brand loyalty among customers; and
- Capital resources.

We compete directly and indirectly for customers with the following categories of companies:

- Online marketing services, internet listing services, mobile software applications or data exchanges targeted to commercial real estate brokers, buyers and sellers of commercial real estate properties, insurance companies, mortgage brokers and lenders, such as Reed Business Information Limited and its Estates Gazette and Radius Data Exchange products, SquareFoot, officespace.com, Brevitas, Catylist & Commercial Exchange (part of Moody's), Altus Group & Commercial Property Search (part of Reonomy), Digsy, Quantum Listing, RealNex MarketPlace, Rofo, CIMLS, CompStak, Rightmove, Yardi (CommercialEdge), CREXi, TotalCommercial.com, DebtX, Real Capital Markets, VTS, TenantBase and Spacelist;

- Publishers and distributors of information, analytics and marketing services, including regional providers and national print publications, such as CBRE Economic Advisors, Marshall & Swift, REIS Network (part of Moody's), Real Capital Analytics, Real Capital Markets, Reonomy, Yardi Matrix, RealPage and its Axiometrics business, Altus Insight and Altus RealNet (Canada);

- Search engines, internet listing services and mobile software applications featuring apartments for rent, such as Google, Bing, Facebook Marketplace, ApartmentGuide.com, Rent.com, Rentals.com, Zillow Rentals, Trulia Rentals, StreetEasy, HotPads.com, MyNewPlace.com, Zumper, Craigslist, ApartmentList.com, Move.com, Realtor.com, RentCafe.com, RentHop, RentBerry, ApartmentRatings, Nooklyn, Home Finder and Rentable;

- Search engines, internet listing services and mobile software applications featuring homes for sale, such as Google, Bing, Facebook Marketplace, Zillow, Trulia, Redfin, Realtor.com, Move.com, Craigslist, RealtyTrac, MLS.com, Home Finder, For Sale by Owner and Auction.com, as well as agent marketing platforms and workflow providers;

- Hospitality benchmarking and analytics services, such as Lodging Econometrics, Kalibri Labs, Amadeus, HotStats, Shiji Group (SnapShot) and Benchmarking Alliance, Lodging Analytics Research & Consulting (LARC);

- Online and mobile software application providers in the residential real estate industry, including Zillow, Redfin, Realtor.com and Rocket Mortgage, as well as agent marketing platforms and workflow providers;

- In the commercial real estate market, locally controlled real estate boards, exchanges or associations sponsoring commercial property listing services and the companies with whom they partner, such as Catylist, the National Association of Realtors, CCIM Institute, Society of Industrial and Office Realtors, the Commercial Association of Realtors Data Services and AIR CRE;

- Real estate portfolio management software solutions, such as Cougar Software, MRI Software, Altus, RealPage, AppFolio and SiteCompli;

- Real estate lease management and administration software solutions, such as Accruent, Tririga, Manhattan Software, Tango Analytics, Lease Accelerator, Visual Lease, Sequnetra, Lease Harbor and AMT Direct;
- Commercial real estate auction platforms such as CREXi, Marketplace, by RealINSIGHT and RCM Lightbox;

- In-house research departments operated by commercial real estate brokers; and

- Public record providers.

As markets for information, analytics and online marketplaces develop, additional competitors (including companies that could have greater access to data, financial, product development, technical, analytic or marketing resources than we do) may enter a market and competition may intensify. For example, a company like Google, which has a far-reaching web presence and substantial data aggregation capabilities, could enter the commercial real estate marketing arena. A company like Zillow, which already has a presence in residential real estate and the apartment rentals industry, could use its resources to further expand in the online apartment rentals industry creating greater competition among internet listing services for the marketing budgets of property managers and property owners. While we believe that we have successfully differentiated ourselves from existing competitors, current or future competitors could materially harm our business. We may also enter markets where incumbent players have greater name recognition and resources, creating challenges as we work to expand.

Proprietary Rights

To protect our proprietary rights in our methodologies, database, software, trademarks and other intellectual property, we depend upon a combination of:

- Trade secret, misappropriation, unfair competition, copyright, trademark, computer fraud, database protection and other laws;
- Registration of copyrights and trademarks;
- Nondisclosure, and other contractual provisions with employees and consultants;
- License agreements with customers;
- Patent protection; and
- Technical measures.

We seek to protect our software's source code, our database and our photography as trade secrets and under copyright law. Although copyright registration is not a prerequisite for copyright protection, we have filed for copyright registration for many of our databases, photographs, software and other materials. Under current U.S. copyright law, the arrangement and selection of data may be protected, but the actual data itself may not be. Certain U.K. database protection laws provide additional protections for our U.K. databases. We license our services under license agreements that grant our clients non-exclusive, non-transferable rights. These agreements restrict the disclosure and use of our information and prohibit the unauthorized reproduction or transfer of any of our proprietary information, methodologies or analytics.

We also attempt to protect our proprietary databases, our trade secrets and our proprietary information through confidentiality and agreements with our employees and consultants. Our services also include technical measures designed to detect, discourage and prevent unauthorized access to and/or copying of our intellectual property. We have established an internal antipiracy team that uses fraud-detection technology to continually monitor use of our services to detect and prevent unauthorized access, and we actively prosecute individuals and firms that engage in this unlawful activity.

We maintain U.S. and international trademark registrations for CoStar Group's core service names and proactively file U.S. and international trademark applications covering our new and planned service names. We own U.S. federally registered trademarks for our brands and services including CoStar®, CoStar Property®, CoStar COMPS®, CoStar Lease Analysis®, LoopNet®, Showcase.com®, CityFeet.com®, Apartments.com®, Land.com®, Ten-X®, Homesnap® and Homes.com®, among many others. In the U.S., trademarks are generally valid so long as they are in use and are capable of indicating CoStar Group as the source of services. We consider our trademarks in the aggregate to constitute a valuable asset.

In addition, we maintain a patent portfolio that protects certain of our systems and methodologies. We currently have six patents in Canada, which expire in 2033 (1 patent), 2035 (2 patents) and 2036 (3 patents), covering, among other things, certain features of our field research methodologies and user interface features, and 12 patents in the U.S. which expire in, 2025 (1 patent), 2032 (2 patents), 2036 (4 patents), 2037 (4 patents) and 2038 (1 patent), covering, among other things, certain features of our field research methodologies and user interface feature. We regard the rights protected by our patents as valuable to our business, but do not believe that our business is materially dependent on any single patent or portfolio of patents as a whole.

Human Capital Resources

As of January 31, 2023, we employed 5,653 employees. U.S.-based employees represent approximately 89% of the overall employee population, followed by 9% in European, Asia-Pacific and Latin American countries and 2% in Canadian provinces. None of our employees are represented by a labor union. We have experienced no work stoppages. As is common with many German companies, employees in our German subsidiary, Thomas Daily GmbH, have elected five fellow employees to form a Works Council, which represents our employees at the location. The Works Council has certain co-determination rights and rights to receive information from us and engage us in discussions under applicable law. BureauxLocaux, in France, has a Social and Economic Committee, which is an employee representative body.

Our human resources and recruiting team works in partnership with business leaders, using a robust process to attract a diverse slate of candidates to fill vacancies and contribute to our growth, including our Careers page on our corporate website, employee referral program, social media and digital platforms, direct outreach, partnerships with commercial real estate industry groups and universities and specific partnerships and programs. The development and retention of our employees is critical to our success. To support career development, we offer on-demand and in-person training programs to new hires, managers and leaders. We also offer a mentoring program, which pairs employees seeking mentorship with more experienced colleagues.

To assess employee engagement, we partner with a survey vendor to survey employees annually. Insights and results gathered from the survey are shared with our leadership, managers and employees and help to inform our human resources program strategy each year. We believe that diverse teams deliver better and more innovative solutions. The diversity of thought that comes from different perspectives and backgrounds allows us to deliver cutting edge research and technology solutions that best serve our customers. We have a dedicated Diversity, Equity and Inclusion team that is tasked with developing topical programming, communications and training including, but not limited to, celebrations of various heritage months and oversight of our employee resource groups, which create avenues for mentoring and professional development within these groups as well as education and awareness across the organization.

We provide competitive pay and benefits to attract and retain high-quality talent. In addition to base salaries, compensation may include annual bonuses, commissions and equity awards. Employees may also participate in an Employee Stock Purchase Plan and a 401(k) Plan with a company match. Our comprehensive set of health and wellness benefits are affordable, high quality and valuable to employees and their families. Employees have multiple choices for health plans, access to vision and

dental benefits and may participate in our employee wellness program as well as our employee assistance program. Additional benefits include paid time off, parental bonding leave, college savings benefits, tuition reimbursement, company-subsidized commuter benefits and access to mental health, tax and legal services.

Available Information

Our investor relations internet website is http://www.costargroup.com/investors. The reports we file with or furnish to the SEC, including our annual report, quarterly reports and current reports, as well as amendments to those reports, are available free of charge on our internet website as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. The SEC maintains an internet site that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC at http://www.sec.gov.

Item 1A. Risk Factors

Risks related to our business

Our revenues and financial position will be adversely affected if we are not able to attract and retain clients. Our success and revenues depend on attracting and retaining subscribers to our information, analytics and online marketplace services. Our subscription-based services generate the largest portion of our revenues. Our revenue may not grow, or could decrease, if we cannot attract new customers, continue to keep our cancellation rate low and continue to sell new services to our existing customers. We may not be able to continue to grow our customer base, keep the cancellation rate low or sell new services to existing customers as a result of several factors, including, continuing global economic and geopolitical volatility, economic pressures and the impact of inflation on our costs and on customer spending; the business failure of current clients; customer decisions that they do not need our services or to use alternative services; customers' and potential customers' budgetary constraints; consolidation in the real estate and/or financial services industries; data quality; technical problems; competitive pressures; or devaluation of the local currencies of international customers relative to the U.S. dollar which impairs the purchasing power of such customers. We compete against many other real estate information, analytics and marketing service providers for business. If clients cancel services or decide not to renew their subscription agreements and we do not sell new services to our existing clients or attract new clients, then our renewal rate, net new sales and revenues may decline or fail to meet expectations.

We may not be able to successfully develop and introduce new or upgraded information, analytics and online marketplace services that are attractive to our users and advertisers or successfully combine or shift focus from current services with less demand, which could decrease our revenues and our profitability. Our future business and financial success will depend on our ability to continue to anticipate the needs of customers and potential customers and to successfully introduce new and upgraded services, including services that make our marketplaces useful for users and attractive to advertisers. To be successful, we must be able to quickly adapt to changes in the industry, as well as rapid technological changes, by continually enhancing our information, analytics and online marketplace services. As a result, we must continually invest resources in research and development to improve the appeal and comprehensiveness of our services and effectively incorporate new technologies.

Developing new services and upgrades to services, as well as integrating and coordinating current services, imposes heavy burdens on our systems department, product development team, management and researchers. The processes are costly, and our efforts to develop, integrate and enhance our services may not be successful. In addition, launching and selling a new or upgraded service puts additional strain on our sales and marketing resources. If we are unsuccessful in obtaining greater market share or in obtaining widespread adoption of new or upgraded services, we may not be able to offset the expenses associated with the development, launch and marketing of the new or upgraded service, which could have a material adverse effect on our financial results. For example, to generate brand awareness and site traffic for our marketplaces, we have and will continue to invest significant resources in multi-channel marketing campaigns. If these marketing campaigns do not increase brand awareness, site traffic and/or revenues, the cost of these campaigns could have an adverse effect on our financial results.

In addition, as we integrate acquired businesses, we continue to assess which services we believe will best meet the needs of our customers. If we eliminate or phase out a service and are not able to offer and successfully market and sell an alternative service, our revenues may decrease, which could have a material adverse effect on our results of operations.

We may not be able to compete successfully against existing or future competitors in attracting advertisers, which could harm our business, results of operations and financial condition. We compete to attract advertisers. Our competitors may have greater brand recognition or more direct sales personnel than we have and may generate more web traffic than we do, which may provide them with competitive advantages. To compete successfully for advertisers, we must continue to invest resources in developing our advertising platform and proving the effectiveness and relevance of our advertising services. Pressure from competitors seeking to acquire a greater share of our advertisers' overall marketing budget could adversely affect our pricing and margins, lower our revenue and increase our research and development and marketing expenses. If we are unable to compete successfully against our existing or future competitors, our business, results of operations or financial condition could be adversely affected.

Competition could render our services uncompetitive and reduce our profitability. The markets for information systems and services and for online marketplaces in general are highly competitive and rapidly changing. Competition in these markets may increase further if economic conditions or other circumstances cause customer bases and customer spending to decrease and service providers to compete for fewer customer resources. Our existing or future competitors may have greater name recognition, larger customer bases, better technology or data, lower prices, easier access to data, greater user traffic or greater financial, technical or marketing resources than we have to provide services that users might view as superior to our offerings. Competitors may introduce different solutions that attract users away from our services or provide solutions similar to ours that have the advantage of better branding or marketing resources. Our competitors may be able to undertake more effective

marketing campaigns, obtain more data, adopt more aggressive pricing policies, make more attractive offers to potential employees, subscribers, advertisers, distribution partners and content providers or may be able to respond more quickly to new or emerging technologies or changes in user requirements. Increased competition could result in lower revenues and higher expenses, which would reduce our profitability.

Our operating results and revenues are subject to fluctuations and our quarterly financial results may be subject to market cyclicality, each of which could negatively affect our stock price. The real estate market may be influenced by general economic conditions, economic cycles, changes in interest rates, seasonality and many other factors, which in turn may impact our financial results. The different sectors of the large and fragmented industry, such as office, industrial, retail, multifamily, single family and others, are influenced differently by different factors, and have historically moved through economic cycles with different timing. As such, it is difficult to estimate the potential impact of economic cycles and conditions or seasonality from year-to-year on our overall operating results. We generally see higher sales of Apartments.com listing services during the peak summer rental season and higher CoStar sales towards the end of the year; however, sales fluctuate from year-to-year and may fluctuate more widely when there are changes in general economic conditions or the industry, such as changes resulting from the COVID-19 pandemic and due to other macroeconomic factors. In addition, we generally incur greater marketing expenses during the second quarter, which coincides with the peak season for apartment rentals. The timing of widely observed holidays and vacation periods, particularly slowdowns during the end-of-year holiday period, and availability of real estate agents and related service providers during these periods, could significantly affect our quarterly operating results during that period. If we are unable to adequately respond to economic, seasonal or cyclical conditions, our revenues, expenses and operating results may fluctuate from quarter to quarter. Our operating results, revenues and expenses may fluctuate for many reasons, including those described in this paragraph and below:

- Rates of subscriber adoption and retention;
- Timing of our annual sales conference or significant marketing events;
- Changes in our pricing strategy and timing of changes;
- The timing and success of new service introductions and enhancements;
- The shift of focus from certain services we offer or the phase out of services that overlap or are redundant with other services we offer;
- The amount and timing of our expenses and capital expenditures;
- The amount and timing of non-cash stock-based charges;
- Acquisition-related costs or impairment charges associated with investments and acquisitions;
- Competition;
- Changes or consolidation in the real estate industry;
- Interest rate fluctuations;
- Execution of our expansion and integration plans;
- The development of our sales force;
- Foreign currency exchange rate fluctuations;
- Inflation; and
- Changes in client budgets.

These fluctuations could negatively affect our results of operations during the period in question and/or future periods or cause our stock price to decline. In addition, changes in accounting policies or practices may affect our level of net income. Fluctuations in our financial results, revenues and expenses may cause the market price of our common stock to decline.

Global economic uncertainties and downturns or a downturn or consolidation in the real estate industry may decrease customer demand for our services and adversely affect our business and results of operations. Global economic uncertainties or downturns could adversely affect our business and results of operations, including financial and credit market fluctuations, changes in economic policy, increased inflation and responsive actions, rising interest rates, labor shortages, supply chain disruptions, trade uncertainty, political unrest, geographical instability or other impacts from the macroeconomic environment. These macroeconomic conditions could cause a decrease in customer spending and negatively affect the rate of growth of our business. The real estate market may be adversely impacted by many different factors, including lower than expected job growth or job losses resulting in reduced real estate demand; reduced real estate demand due to continued remote work policies; rising interest rates and slowing transaction volumes due to the impact of the COVID-19 pandemic or other macroeconomic events that negatively impact investment returns; excessive speculative new construction in localized markets resulting in increased vacancy rates and diminished rent growth; unanticipated disasters; and other adverse events such as decreased growth in the working age population resulting in reduced demand for all types of real estate. In response to concerns over inflation, the U.S. Federal Reserve raised interest rates in each quarter of 2022 and the first quarter of 2023, and has signaled that it expects additional interest rate increases, which could negatively impact the real estate market. A downturn in the real estate market, including as a result of increased interest rates or a decline in leasing activity and absorption rates may affect our ability to generate revenues and may lead to more cancellations by our current or future customers, either of which could cause our revenues or our revenue growth rate to decline and reduce our profitability. A depressed real estate market has a negative

impact on our core customer base, which could decrease demand for our information, analytics and online marketplaces. Also, companies in this industry may consolidate, often in order to reduce expenses. Consolidation, or other cost-cutting measures by our customers, may lead to cancellations of our information, analytics and online marketplace services by our customers, reduce the number of our existing clients, reduce the size of our target market or increase our clients' bargaining power, all of which could cause our revenues to decline and reduce our profitability. If cancellations, reductions of services and failures to pay increase, and we are unable to offset the resulting decrease in revenues by increasing sales to new or existing customers, our revenues may decline or grow at lower rates.

If we are unable to hire qualified persons for, or retain and continue to develop, our sales force, or if our sales force is unproductive, our revenues could be adversely affected. In order to support revenues and revenue growth, we need to continue to develop, train and retain our sales force. Our ability to build and develop a strong sales force may be affected by a number of factors, including: our ability to attract, integrate and motivate sales personnel; our ability to effectively train our sales force; the ability of our sales force to sell an increased number and different types of services; our ability to manage effectively an outbound telesales group; the length of time it takes new sales personnel to become productive; the competition we face from other companies in hiring and retaining sales personnel; our ability to effectively structure our sales force; and our ability to effectively manage a multi-location sales organization, including field sales personnel. If we are unable to hire qualified sales personnel and develop and retain our sales force, including sales force management, or if our sales force is unproductive, our revenues or growth rate could decline and our expenses could increase. We may face additional challenges in hiring employees in an increasingly competitive job market.

Our business depends on retaining and attracting highly capable management and operating personnel. Our success depends in large part on our ability to retain and attract management and operating personnel, including our President and Chief Executive Officer, Andrew Florance, and our other officers and key employees. Our business requires highly skilled technical, sales, management, web product and development, marketing and research personnel, who are in high demand and are often subject to competing offers. The measures we use to attract and retain key personnel may not be enough to attract and retain the personnel we need or to offset the impact on our business of the loss of the services of Mr. Florance or other key officers or employees.

Our internal and external investments may place downward pressure on our operating margins. To increase our revenue growth, we continue to invest in our business, including internal investments in product and content development to expand the breadth and depth of services we provide to our customers and external investments in sales and marketing to generate brand awareness. Our operating margins may experience downward pressure in the short term as a result of these investments. Furthermore, our investments may not produce the expected results. If we are unable to successfully execute our investment strategy, we may experience decreases in our revenues or revenue growth rate and operating margins.

We may be unable to increase awareness of our brands, including CoStar, LoopNet, Apartments.com, BizBuySell, Land.com, STR, Ten-X, Homes.com and Homesnap, which could adversely affect our business. We rely heavily on our brands, which we believe are key assets of our company. Awareness and differentiation of our brands are important for attracting and expanding the number of users of, and subscribers to, our online marketplaces, such as LoopNet, the Apartments.com network of rental websites, our Homes.com and Homesnap residential marketplaces, CoStar Showcase and the Land.com Network. We continue to invest significantly in sales and marketing as we seek to grow the numbers of users of, subscribers to and advertisers on, our marketplaces. Our methods of advertising may not be successful in increasing brand awareness or, ultimately, be cost-effective. If we are unable to maintain or enhance user and advertiser awareness of our brands, or if we are unable to recover our marketing and advertising costs through increased usage of our services and increased advertising on our websites, our business, results of operations and financial condition could be adversely affected.

If internet search engines do not prominently feature our websites on the search engine results page, traffic to our websites would decrease and, if we are unable to maintain or increase traffic to our marketplaces, our business and operating results could be adversely affected. Our ability to generate revenues from our marketplace business depends, in part, on our ability to attract users to our websites. Google, Bing, DuckDuckGo and other internet search engines drive traffic to our websites, including CoStar.com, the Apartments.com network of rental websites, the LoopNet.com network of commercial real estate websites, Ten-X.com, our Homes.com and Homesnap residential marketplaces, the BizBuySell.com network of business for-sale websites and the Land.com Network. For example, when a user enters in a search query for an apartment building name or address into an internet search engine, the internet search engine's ranking of our Apartments.com webpages will determine how prominently such webpages are displayed on the search engine results page. Our ability to maintain prominent search result rankings and positioning is not entirely within our control. Our competitors' SEO and SEM efforts may result in webpages from their websites receiving higher rankings than the webpages from our websites. Internet search engines could revise their algorithms and methodologies in ways that would adversely affect our search result rankings. Internet search engine providers could form partnerships or enter into other business relationships with our competitors resulting in competitors' sites

receiving higher search result rankings. Internet search engines are increasingly placing alternative search features (such as featured snippets, local map results and other immersive experiences) on the search engine results page above or more prominently than search engine results. If our search result rankings are not prominently displayed, traffic to our websites may decline which could slow the growth of our user base. Our websites have experienced fluctuations in search result rankings in the past and we anticipate similar fluctuations will occur in the future. If we experience a material reduction in the number of users directed to our websites through internet search engines or otherwise fail to maintain or increase traffic to our marketplaces, our ability to acquire additional subscribers or advertisers and deliver leads to and retain existing subscribers and advertisers could be adversely affected. As a result, our business, results of operations and financial condition could be adversely affected. Our marketing expenses may increase in connection with our efforts to maintain or increase traffic to our websites. Increases in our operating expenses could negatively impact our operating results if we are unable to generate more revenues through increased sales of subscriptions to our marketplace products.

If real estate professionals or other advertisers reduce or cancel their advertising spending with us and we are unable to attract new advertisers, our operating results would be harmed. Our marketplace businesses, including LoopNet, the Apartments.com network of rental websites, our residential brands including Homes.com and Homesnap and the Land.com Network, depend on advertising revenues generated primarily through sales to persons in the real estate industry, including property managers and owners and other advertisers. Our ability to attract and retain advertisers, and ultimately to generate advertising revenue, depends on a number of factors, including:

- Increasing the number of unique visitors to, and users of, our websites and mobile applications;
- The quantity and quality of the leads that we provide to our advertisers;
- The success of any marketing and product development efforts directed at attracting additional users and advertisers to our marketplaces;
- Keeping pace with changes in technology and with our competitors; and
- Offering an attractive return on investment to our advertisers for their advertising dollars spent with us.

Further, with respect to the Apartments.com network of rental websites, our ability to attract and retain advertisers also depends on the current apartment rental market and apartment vacancy rates. If vacancy rates are too high or too low, advertisers may not need to utilize our marketplace services.

Many of the advertisers who advertise on our marketplaces do not have long-term contracts. These advertisers could choose to modify or discontinue their relationships with us with little or no advance notice. As existing subscriptions for advertising expire, we may not be successful in renewing these subscriptions or securing new subscriptions. We may not succeed in retaining existing advertisers' spending or capturing a greater share of such spending if we are unable to convince advertisers of the effectiveness of our services as compared to alternatives. In addition, future changes to our pricing methodology for advertising services may cause advertisers to reduce or discontinue their advertising with us. If current advertisers reduce or end their advertising spending with us and we are unable to attract new advertisers, our advertising revenues and business, results of operations and financial condition could be adversely affected.

If we are not able to successfully identify, finance, integrate and/or manage costs related to acquisitions, our business operations and financial position could be adversely affected. We have expanded our markets and services in part through acquisitions of complementary businesses, services, databases and technologies, and expect to continue to do so in the future. Our acquisition strategy depends on our ability to identify, and the availability of, suitable acquisition candidates. We are likely to incur costs in connection with proposed acquisitions, but may ultimately be unable or unwilling to consummate any particular proposed transaction for various reasons. For example, in 2021, the FTC withheld approval for our proposed acquisition of RentPath, the purchase agreement was subsequently terminated and we incurred a termination fee of $52 million. We are also likely to incur severance costs and other integration costs post-acquisition. Costs in connection with acquisitions and integrations may be higher than expected and could adversely affect our financial condition, results of operation or prospects of the combined business. In addition, acquisitions involve numerous risks, including risks that we will not be able to realize or capitalize on synergies created through combinations; manage the integration of personnel and products or services; manage the integration of acquired infrastructure and controls; control potential increases in operating costs; manage geographically remote operations; maintain management's attention on other business concerns and avoid potential disruptions in ongoing operations during an acquisition process or integration efforts; successfully enter markets and sectors in which we have either limited or no direct experience, including foreign markets whose practices, regulations or laws may pose increased risk; and retain key employees, clients or vendors and other business partners of the acquired companies. We may not successfully integrate acquired businesses or assets and may not achieve anticipated benefits of an acquisition, including expected synergies. For example, we may be unable to fully integrate Homesnap, Homes.com, BureauxLocaux and Business Immo with CoStar Group when and as expected.

We were previously subject to a consent order agreed to among the FTC staff, CoStar Group and LoopNet on April 17, 2012 in connection with the LoopNet merger. This consent order expired in August 2022, but if we become subject to similar orders in the future, compliance with such orders could prevent us from closing certain acquisitions or add significant time and cost to such acquisitions, ultimately making an acquisition prohibitive or preventing us from realizing its anticipated benefits.

External factors, such as compliance with laws and regulations and shifting market preferences, may also impact the successful integration of an acquired business. An acquired business could strain our system of internal controls and diminish its effectiveness. Acquisitions could result in dilutive issuances of equity securities, the incurrence of debt and substantial amortization expenses of other intangible assets. We may be unable to obtain financing on favorable terms, or at all, if necessary to finance future acquisitions, making it impossible or more costly to complete future acquisitions. If we are able to obtain financing, the terms may be onerous and restrict our operations. Further, certain acquisitions may be subject to regulatory approval, which can be time-consuming and costly to obtain or may be denied, as in the case of RentPath. If regulatory approval is obtained, the terms of any such approval may impose limitations on our ongoing operations or require us to divest assets or lines of business. If regulatory approval is denied, we may incur significant, additional costs payable to an acquisition target as a result of failure to close the transaction. For example, we incurred a termination fee of $52 million in connection with termination of the RentPath purchase agreement. Significant break-up fees incurred in the future may adversely affect our results of operation and financial condition.

As a result of our acquisitions, we had approximately $2.6 billion of goodwill and intangibles as of December 31, 2022. Future acquisitions may increase this amount. If we are required to recognize goodwill and intangibles impairment charges in the future, this would negatively affect our financial results in the periods of such charges, which may reduce our profitability.

Cyberattacks and security vulnerabilities could result in serious harm to our reputation, business and financial condition. As stated above, our business relies on IT Systems and involves the generation, collection, storage, processing and transmission of Confidential Information, including personal information and proprietary business information. We own and manage IT Systems but also rely on third-party managed IT Systems and a broad array of third-party products and services to support our business operations. An increasing number of organizations, including large merchants, businesses, technology companies and financial institutions, as well as government institutions, have disclosed security incidents, disruptions to, and breaches of their or third-party providers' IT Systems, some of which have involved sophisticated and highly targeted attacks, including on websites, mobile applications and infrastructure.

We have expended resources to implement and maintain security measures designed to protect IT Systems and Confidential Information, including engaging a third-party vendor to conduct an annual audit of our information security systems in accordance with NIST CSF benchmarks. Despite these measures and similar measures implemented by many third-party providers, our IT Systems, or those of third parties on which we rely, may be disrupted or damaged and our Confidential Information may be compromised, corrupted, lost or stolen. The techniques used to obtain unauthorized, improper or illegal access to a target's systems, data or customers' data, disable or degrade services, or sabotage systems are constantly evolving and have become increasingly complex and sophisticated, may be difficult to detect quickly and often are not recognized or detected until after they have been launched against a target. We expect that unauthorized parties will continue to attempt to gain access to or disrupt our IT systems or facilities through various means, including hacking into IT Systems or facilities or those of our customers or vendors, or attempting to fraudulently induce (for example, through spear phishing attacks or social engineering) our employees, customers, vendors or other users of IT Systems into disclosing user names, passwords, or other sensitive information, which may in turn be used to access our IT Systems.

Numerous and evolving cybersecurity threats, including advanced and persisting cyberattacks, phishing and social engineering schemes, could compromise the confidentiality, availability and integrity of the data such as Confidential Information and our IT systems. Our efforts to prevent, detect and respond to data security incidents, may not be effective due to attackers increasingly using tools and techniques that are designed to circumvent controls, to avoid detection, and to remove or obfuscate forensic evidence. Further, the security measures and procedures our customers, vendors and other users of our systems have in place to protect IT Systems and Confidential Information may not be successful or sufficient to counter all data breaches, cyberattacks or system failures. In addition, the COVID-19 pandemic has increased cybersecurity risk as a result of global remote working dynamics that may continue into the future and present additional opportunities for threat actors to engage in social engineering (for example, phishing) and to exploit vulnerabilities in non-corporate networks.

Our IT Systems may be vulnerable to cyberattacks or security breaches, and third parties may be able to access our, our customers' or our employees' Confidential Information, including personal or proprietary information, that is stored on or accessible through those systems. We have experienced and expect to continue to experience in the future, cyberattacks as well as breaches of our security measures due to human error, malfeasance, system errors or vulnerabilities or other irregularities. In the past three years, we have not experienced a materially disruptive information security breach, but any actual or perceived

breaches of our security could result in any or all of the following, among other things, any of which could adversely affect our business and results of operations:

- Interrupt our operations;
- Result in our systems or services being unavailable;
- Result in improper disclosures of data;
- Result in improper payments;
- Materially harm our reputation and brands;
- Result in significant regulatory scrutiny and legal and financial exposure;
- Cause us to incur significant remediation and compliance costs;
- Lead to loss of customer confidence in, or decreased use of, our products and services;
- Divert the attention of management from the operation of our business; and
- Result in significant contractual penalties or other payments as a result of third-party losses or claims.

In addition, any cyberattacks or data security breaches affecting companies that we acquire or our customers or vendors (including data center and cloud computing providers) could have similar negative effects on our business. For example, in December 2020, we became aware that one of our vendors providing IT infrastructure management software, SolarWinds Corporation, had been compromised by cyberattacks. As of December 22, 2020, we had implemented the fully patched versions of the SolarWinds software and we took additional measures to block internet connectivity to and from all SolarWinds' Orion servers. Although we have not identified any compromise of our IT Systems due to the use of SolarWinds software to date, we continue to monitor our network for any potential impact related to the SolarWinds cyberattack. Similarly, we are regularly exposed to vulnerabilities in widely deployed third-party software that we use in the ordinary course of business, such as the recently identified Log4J vulnerability. While this vulnerability did not have a material adverse effect on our operations, it and similar incidents require us to devote time and resources to remediation on a regular basis. Further, we may not be able to recover any or all damages suffered as a result of such security breach or other security incident from such third-party providers. Notwithstanding our efforts, there can be no assurance that vulnerabilities in widely deployed software will not materially harm our business. Any breach of our security measures or the loss, inadvertent disclosure or unapproved dissemination of Confidential Information about us or our customers, including the potential loss or disclosure of such information or data, could result in litigation, regulatory enforcement and potential liability for us, damage our brand and reputation or otherwise materially harm our business, financial condition or competitive position.

The coverage under our insurance policies for cybersecurity and related issues may not be adequate to reimburse us for losses caused by cyberattacks or other security incidents.

Technical problems or disruptions that affect either our customers' ability to access our services, or the software, internal applications, database and network systems underlying our services, could damage our reputation and lead to reduced demand for our information, analytics and online marketplace services, lower revenues and increased costs. Our business, brands and reputation depend upon the satisfactory performance, reliability and availability of our websites, the internet and our service providers. Interruptions in these systems, whether due to system failures, computer viruses, software errors, physical or electronic break-ins, or malicious hacks or attacks on our systems (such as denial of service attacks or use of malware such as ransomware) could affect the security and availability of our services on our mobile applications and our websites and prevent or inhibit users' access to our services. Our operations also depend on our ability to protect our databases, computers and software, telecommunications equipment and facilities against damage from potential dangers such as fire, flood, power loss, security breaches, computer viruses, telecommunications failures, terrorist attacks, acts of war, electronic and physical break-ins, computer viruses, earthquakes and similar events.

In addition, the software, internal applications and systems underlying our services are complex and may not be error-free. We may encounter technical problems when we attempt to enhance our software, internal applications and systems. Our users rely on our services for the conduct of their own businesses. Disruptions in, technical problems with, or reductions in ability to access our services for any reason could damage our users' businesses, harm our reputation, result in additional costs or reduce demand for our information, analytics and online marketplace services, any of which could harm our business, results of operations and financial condition.

The majority of the communications, network and computer hardware used to operate our mobile applications and websites are located at facilities in Virginia and California. We do not own or control the operation of certain of these facilities. Our systems and operations are vulnerable to damage or interruption from fire, flood, power loss, security breaches, computer viruses, telecommunications failure, terrorist attacks, acts of war, electronic and physical break-ins, earthquakes and similar events. These risks may be increased with respect to operations housed at facilities we do not own or control. The occurrence of any of the foregoing events could result in damage to our systems and hardware or could cause them to fail completely, and our insurance may not cover such events or may be insufficient to compensate us for losses that may occur.

A failure of our systems at any site could result in reduced functionality for our users, and a total failure of our systems could cause our mobile applications or websites to be inaccessible. Problems faced or caused by our information technology service providers, including content distribution service providers, private network providers, internet providers and third-party web-hosting providers, or with the systems by which they allocate capacity among their customers (as applicable), could adversely affect the experience of our users. Any financial difficulties, such as bankruptcy reorganization, faced by these third-party service providers or any of the service providers with whom they contract may have negative effects on our business, the nature and extent of which are difficult to predict. If our third-party service providers are unable to keep up with our growing needs for capacity, our business could be harmed. In addition, if distribution channels for our mobile applications experience disruptions, such disruptions could adversely affect the ability of users and potential users to access or update our mobile applications, which could harm our business.

Our business interruption insurance may not cover certain events or may be insufficient to compensate us for the potentially significant losses, including the potential harm to the future growth of our business, which may result from interruptions in our service as a result of system failures or malicious attacks. Any errors, defects, disruptions or other performance problems with our services could harm our reputation, business, results of operations and financial condition.

We are planning to undertake a large infrastructure project to build out our campus in Richmond, Virginia, the costs of which could impact our financial condition and results of operations. In December 2021, we announced our plans to expand our research and technology center in Richmond, Virginia. These plans will require significant capital expenditures over the next several years and our business plans may change. Future changes in growth or fluctuations in cash flow may also negatively impact our ability to finance this project. Additionally, actual capital expenditures could vary materially from our projected capital expenditures, which could negatively impact our business, operating results and financial condition. If we are provided with any grants, tax credits, abatements or other incentives related to this expansion effort and do not meet requirements associated with those incentives, we may not be able to benefit from those incentives, which could cause the cost of the project to be significantly more than anticipated or significantly increase our taxes above what we currently expect. We currently plan to finance construction with cash on hand. Use of cash on hand to finance construction would reduce the amount of cash available for other corporate uses and could also reduce our ability to meet our scheduled debt service obligations or to meet the covenants required to borrow additional funds under our 2020 Credit Agreement. Any of the foregoing may adversely affect our financial position and results of operations.

Our current or future geographic expansion plans may not result in increased revenues, which may negatively impact our business, results of operations and financial position. Expanding into new markets and increasing the depth of our coverage in existing markets imposes additional burdens on our research, systems development, sales, marketing and general managerial resources. If we are unable to manage our expansion efforts effectively, if our expansion efforts take longer or are more expensive than planned or we are not successful in marketing and selling our services in existing or new markets, our expansion may have a material adverse effect on our financial position by increasing our expenses without increasing our revenues.

Our business and results of operations may be, and our financial condition may be, impacted by the COVID-19 pandemic and its effects on the global economy, the real estate industry, and our customers,, and such impact could be materially adverse and continue for an unknown period of time. The COVID-19 pandemic has created significant economic volatility, uncertainty and disruption around the world, including in the real estate industry.

The demand for office space could decrease significantly as businesses implement hybrid or all work-from-home arrangements in response to employee desire for more flexibility, which may lead to a downturn in the commercial real estate market. A depressed commercial real estate market would have a negative impact on our core customer base, which could impact our customers' ability to subscribe and pay for our services and reduce demand for our services. Reduced demand and increased cancellations could cause our revenues or our revenue growth rates to decline and reduce our profitability. As a result of COVID-19 and its impact on global economic conditions, including the real estate industry, towards the end of the first quarter and in the first two months of the second quarter of 2020, we saw an increase in customer requests for cancellations or suspensions, a reduction in new customer sales, failures to pay and delays in payments of amounts owed to us. We may see additional requests as ongoing economic uncertainty causes customers to reduce expenses and prolong the decision-making time before purchasing third-party services, which may lead to fewer of our services being purchased or service cancellations. The extent and duration of any future continued weakening of the economy is unknown, and there can be no assurance that any of the governmental or private sector initiatives designed to strengthen the economy will be successful or available to us and our customers and, if successful, when the benefits will be seen.

COVID-19, and the disruption in global economic conditions stemming from the pandemic, could also precipitate or aggravate the other risk factors discussed herein, which could materially adversely affect our business, financial condition and

results of operations. Further, the COVID-19 pandemic may also affect our operating and financial results in a manner that is not presently known to us or that we currently do not consider to present significant risks.

We are subject to a number of risks related to acceptance of credit cards and debit cards and facilitation of other customer payments.

We depend on processing vendors to complete credit and debit card transactions. If we or our processing vendors fail to maintain adequate systems to authorize and process credit card transactions, one or more of the major credit card companies could disallow our continued use of their payment products. If we are unable to maintain our chargeback rate or refund rates at acceptable levels, our processing vendors may increase our transaction fees or terminate their relationships with us. We could lose customers if we are not able to continue to use payment products of the major credit card companies. In addition, if the systems to authorize and process credit card transactions fail to work properly and, as a result, we do not charge our customers' credit cards on a timely basis or at all, our business, revenue, results of operations and financial condition could be harmed.

We depend on processing vendors to complete credit and debit card transactions and ACH payments, both for payments made to us directly for our services and for payments made by renters to landlords using our online leasing services. If we or any one or more of these service providers fail to maintain adequate systems for authorization and processing credit card payments, it could cause one or more of the major credit card companies to disallow our continued use of their payment products. Further, if we or any one or more of these service providers fail to maintain adequate systems for authorization and processing of credit, debit, ACH or similar payments or if any such service provider were to terminate or modify its relationship with us unexpectedly, our ability to process those customer transactions would be adversely affected, which could decrease sales, discourage customers away from our marketplace services, result in potential legal liability, and harm our business and reputation. In addition, if the systems for the authorization and processing of credit card transactions fail to work properly and, as a result, we do not charge our customers' credit cards on a timely basis or at all, our business, revenue, results of operations and financial condition could be harmed.

We are also subject to payment card association operating rules, certification requirements and rules governing electronic funds transfers, which could change or be reinterpreted in ways that make it more difficult for us to comply. We are required to comply with payment card industry security standards. Failing to comply with those standards may violate payment card association operating rules, federal and state laws and regulations and the terms of our contracts with payment processors. Any failure to comply also may subject us to fines, penalties, damages and civil liability, and may result in the loss of our ability to accept credit and debit card payments. Further, there is no guarantee that such compliance will prevent illegal or improper use of our payment systems or the theft, loss, or misuse of data pertaining to credit and debit cards, cardholders and transactions.

The payment methods that we offer also subject us to potential fraud and theft by criminals, who are becoming increasingly sophisticated, seeking to obtain unauthorized access to or exploit weaknesses that may exist in the payment systems. If we fail to comply with applicable rules or requirements for the payment methods we accept, or if payment-related data are compromised due to a breach of data, we may be liable for significant costs incurred by payment card issuing banks and other third parties or subject to fines and higher transaction fees, or our ability to accept or facilitate certain types of payments may be impaired. In addition, our customers could lose confidence in certain payment types, which may result in a shift to other payment types or potential changes to our payment systems that may result in higher costs. If we fail to adequately control fraudulent payment transactions, we may face civil liability, diminished public perception of our security measures and higher costs, each of which could harm our business, results of operations and financial condition.

If we are unable to maintain our chargeback rate or refund rates at acceptable levels, our processing vendors may increase our transaction fees or terminate their relationships with us. Any increases in our credit and debit card fees could harm our results of operations, particularly if we elect not to raise our rates for our services to offset the increase. The termination of our ability to process payments on any major credit or debit card would significantly impair our ability to operate our business.

Climate change and other events beyond our control could harm our business. Natural disasters, disease outbreaks and pandemics, power shortages, terrorism, political unrest, telecommunications failure, vandalism, geopolitical instability, war, climate change, and other events beyond our control could negatively impact our operations or otherwise harm our business. Such events may result in damage or loss of service to our data centers or other infrastructure that our operations rely on, potentially reduce the attractiveness of real estate in areas we provide services, cause delays in product development or availability, or result in losses of critical data, any of which may adversely impact our operations.

In addition, the impacts of climate change on the global economy and our industry are rapidly evolving. Physical impacts of climate change (including, but not limited to, floods, droughts, more frequent and/or intense storms, and wildfires) may disrupt our operations, as well as the operations of our suppliers and customers. Longer-term physical impacts may also result

in changing consumer preferences, which may adversely impact demand for certain of our products. Transition impacts of climate change may subject us to increased regulations, reporting requirements (such as the SEC's proposed climate change disclosure rule), standards, or expectations regarding the environmental impacts of our business. Failure to disclose accurate information in a timely manner may also adversely affect our reputation, business, or financial performance.

Increased attention to ESG matters may require us to incur additional costs or otherwise adversely impact our business. Increased attention to climate change; diversity, equity, and inclusion; and other ESG issues, as well as societal expectations regarding voluntary ESG initiatives and disclosures, may result in increased costs (including, but not limited to, increased costs related to compliance, stakeholder engagement, and contracting), impact our reputation, or otherwise affect our business performance. In addition, organizations that provide information to investors on corporate governance and related matters have developed ratings processes for evaluating companies on ESG matters. Such ratings are used by some investors to inform their investment or voting decisions. Unfavorable ESG ratings could lead to negative investor sentiment toward us and/or our industry, which could have a negative impact on our access to and costs of capital. To the extent ESG matters negatively impact our reputation, we may also not be able to compete as effectively to recruit or retain employees. We may take certain actions, including the establishment of ESG-related goals or targets, to improve the ESG profile of our Company and/or offerings and/or to respond to stakeholder demand; however, such actions may be costly or be subject to numerous conditions that are outside our control, and we cannot guarantee that such actions will have the desired effect.

Moreover, while we may create and publish voluntary disclosures regarding ESG matters from time to time, many of the statements in those voluntary disclosures are based on hypothetical expectations and assumptions that may or may not be representative of current or actual risks or events or forecasts of expected risks or events, including the costs associated therewith. Such expectations and assumptions are necessarily uncertain and may be prone to error or subject to misinterpretation given the long timelines involved and the lack of an established single approach to identifying, measuring and reporting on many ESG matters. Such disclosures may also be at least partially reliant on third-party information that we have not independently verified or cannot be independently verified. In addition, we expect there will likely be increasing levels of regulation, disclosure-related and otherwise, with respect to ESG matters, and increased regulation will likely lead to increased compliance costs as well as scrutiny that could heighten all of the risks identified in this risk factor. Such ESG matters may also impact our suppliers or customers, which may adversely impact our business, financial condition, or results of operations.

Risks related to our data, intellectual property and listings

If we are not able to obtain and maintain accurate, comprehensive or reliable data, we could experience reduced demand for our information, analytics and online marketplace services. Our success depends on our clients' confidence in the comprehensiveness, accuracy and reliability of the data and analysis we provide.

Establishing and maintaining accurate and reliable data and analysis is challenging. If our data, including the data we obtain from third parties or directly from brokers through the Marketing Center feature on CoStar and LoopNet, or analysis is not current, accurate, comprehensive or reliable, we could experience reduced demand for our services or be subject to legal claims by our customers, either of which could result in lower revenues and higher expenses.

If we are unable to enforce or defend our ownership and use of intellectual property, our business, brands, competitive position and operating results could be harmed. The success of our business depends in large part on our intellectual property, including intellectual property involved in our methodologies, databases, services and software. We rely on a combination of trademark, trade secret, patent, copyright and other laws, nondisclosure and noncompetition provisions, license agreements and other contractual provisions and technical measures to protect our intellectual property rights. However, current law may not provide for adequate protection of our databases and the actual data. In addition, legal standards relating to the validity, enforceability and scope of protection of proprietary rights in internet-related businesses are uncertain and evolving, and changes in these standards may adversely impact the viability or value of our proprietary rights. We find our proprietary content on competitors' sites. If we are not successful in protecting our intellectual property, including our content, our brands and our business, results of operations and financial condition could be harmed. The same would be true if a court found that our services infringe other persons' intellectual property rights. Any intellectual property lawsuits or threatened lawsuits in which we are involved, either as a plaintiff or as a defendant, have cost us and could continue to cost us a significant amount of time and money and distract management's attention from operating our business. In addition, if we do not prevail on an intellectual property claim, this could result in a change to our methodology or information, analytics and online marketplace services and could reduce our profitability.

Effective trademark, trade secret, patent and copyright protection may not be available in every country in which we provide our services. The laws of certain countries do not protect proprietary rights to the same extent as the laws of the U.S. and, therefore, in certain jurisdictions, we may be unable to protect our intellectual property and our proprietary technology

adequately against unauthorized third-party copying or use, which could harm our competitive position. This risk will increase as we continue to expand our business into new international jurisdictions.

We may not be able to successfully halt the operation of websites that aggregate our data, as well as data from other companies, or "copycat" websites that may misappropriate our data. Third parties may misappropriate our data through website scraping, robots or other means and aggregate and display this data on their websites. In addition, “copycat” websites may misappropriate data on our website and attempt to imitate our brands or the functionality of our website. We may not be able to detect all such websites in a timely manner and, even if we could, technological and legal measures available to us may be insufficient to stop their operations and the misappropriation of our data. Any measures that we may take to enforce our rights could require us to expend significant financial or other resources.

We may be subject to legal liability for collecting, displaying or distributing information. Because the content in our database is collected from various sources and distributed to others, we may be subject to claims for breach of contract, defamation, negligence, unfair competition or copyright or trademark infringement or claims based on other theories, such as breach of laws related to privacy and data protection. We could also be subject to claims based upon the content that is accessible from our website through links to other websites or information on our website supplied by third parties. Even if these claims do not result in liability to us, we could incur significant costs in investigating and defending against any claims, and we could be subject to public notice requirements that may affect our reputation. Our potential liability for information distributed by us to others could require us to implement measures to reduce our exposure to such liability, which may require us to expend substantial resources and limit the attractiveness of our information, analytics and online marketplaces to users. These risks may be exacerbated from impacts, or perceived impacts, of emerging technologies (including, but not limited to, machine learning) on human rights, privacy, or other social considerations, which may result in reputational harm, compliance costs for any new rules or interpretations, or other adverse impacts on our operations and financial performance.

If we are unable to obtain or retain listings from real estate brokers, agents, property owners and apartment property managers, our marketplace services could be less attractive to current or potential customers, which could reduce our revenues. The value of our real estate marketplace services to our customers depends on our ability to increase the number of property listings provided and searches conducted. As the number of listings increases, so does the utility of a marketplace’s search, listing and marketing services. We depend substantially on brokers, agents, property owners and, in the case of apartment rentals, property managers to submit listings to our marketplaces. If these parties choose not to continue their listings with us, or choose to list them with a competitor, our marketplace services could be less attractive to other real estate industry transaction participants, resulting in reduced revenue.

Risks related to our international operations

International operations expose us to additional business risks, which may reduce our profitability. Our international operations and expansion subject us to additional business risks, including: currency exchange rate fluctuations; difficulty in adapting to the differing business practices and laws in foreign countries, including differing laws regarding privacy and data protection; difficulty in managing foreign operations; limited protection for intellectual property rights in some countries; difficulty in collecting accounts receivable and longer collection periods; costs of enforcing contractual obligations; impact of recessions in economies outside the U.S.; geopolitical instability, terrorism and war, including the conflict between Ukraine and Russia; and potentially adverse tax consequences. In addition, international expansion imposes additional burdens on our executive and administrative personnel, systems development, research and sales departments and general managerial resources. If we are not able to manage our international operations successfully, we may incur higher expenses and our profitability may be reduced. Finally, the investment required for additional international expansion sometimes exceeds the profit generated from such expansion, which reduces our profitability and may adversely affect our financial position.

Fluctuating foreign currency exchange rates may negatively impact our business, results of operations and financial position. A portion of our business is denominated in foreign currencies. We translate sales and other results denominated in foreign currency into U.S. dollars for our financial statements. During periods of a strengthening U.S. dollar, our reported international sales and earnings could be reduced because foreign currencies may translate into fewer U.S. dollars. Foreign currency exchange rates have fluctuated and may continue to fluctuate.

Significant foreign currency exchange rate fluctuations may negatively impact our international revenue, which in turn affects our consolidated revenue. Currently, we are not party to any hedging transactions intended to reduce our exposure to exchange rate fluctuations. We may seek to enter into hedging transactions in the future, but we may be unable to enter into these transactions successfully, on acceptable terms or at all. We cannot predict whether we will incur foreign exchange losses in the future. Further, significant foreign exchange rate fluctuations resulting in a decline in the respective local currency may

decrease the value of our foreign assets, as well as decrease our revenues and earnings from our foreign subsidiaries, which would reduce our profitability and adversely affect our financial position.

The economic effects of Brexit may affect relationships with existing and future customers and could have an adverse impact on our business and operating results. On June 23, 2016, the U.K. held a referendum in which British citizens approved an exit from the E.U., commonly referred to as "Brexit." On January 31, 2020, the U.K. officially withdrew from the E.U., and later ratified a trade and cooperation agreement governing its future relationship with the E.U. The agreement, which became effective May 1, 2021, addresses trade, economic arrangements, law enforcement, judicial cooperation and a governance framework, including procedures for dispute resolution, among other things. Because the agreement merely sets forth a framework in many respects and will require complex additional bilateral negotiations between the U.K. and the E.U. as both parties continue to work on the rules for implementation, significant political and economic uncertainty remains about how the precise terms of the relationship between the parties will differ from the terms before withdrawal. Such uncertainty could have an adverse effect on our business and results of operations. Brexit may also lead to divergent national laws and regulations as the U.K. continues to consider which E.U. laws to replace or replicate, and compliance with those laws and regulations may be cumbersome, difficult or costly. We cannot yet predict the full implications of Brexit, including whether it will further increase our cost of doing business or otherwise adversely affect our financial condition or results of operations. The ongoing impact to us from Brexit may affect not only our U.K. operations but also our E.U. operations.

Risks related to our indebtedness

We have a significant amount of indebtedness, which could decrease our flexibility and adversely affect our business, financial condition and results of operations. As of December 31, 2022, we had $1 billion of Senior Notes outstanding and an additional approximately $750 million available to be drawn under the 2020 Credit Agreement. There can be no assurance that our future cash flows will be sufficient to make payments of interest or principal on the Senior Notes or any amounts due and payable under the 2020 Credit Agreement. If our cash flows 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 effect 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. Furthermore, we may incur substantial additional indebtedness, including secured indebtedness, and if we incur additional indebtedness or other liabilities, the related risks that we face could intensify.

The 2020 Credit Agreement contains customary restrictive covenants imposing operating and financial restrictions on us, including restrictions that may limit our ability to engage in acts that we believe may be in our long-term best interests. These covenants restrict our ability and the ability of our domestic subsidiaries to, among other things, (i) incur additional indebtedness, (ii) incur liens, (iii) pay dividends or make certain other restricted payments, investments or acquisitions, (iv) merge or consolidate with another person, and (v) sell, assign, lease or otherwise dispose of all or substantially all of our assets. In addition, the 2020 Credit Agreement requires us to comply with a maintenance covenant that we will not exceed a total net leverage ratio, calculated as total consolidated debt, net of up to $1.0 billion of unrestricted cash and cash equivalents, to consolidated EBITDA, of 4.50 to 1.00. The operating restrictions and financial covenants in the 2020 Credit Agreement may limit our ability to finance future operations or capital needs, to engage in other business activities or to respond to changes in market conditions. Our ability to comply with any financial covenants could be affected materially by events beyond our control, and we may be unable to satisfy any such requirements. If we fail to comply with these covenants, we may need to seek waivers or amendments of such covenants, seek alternative or additional sources of financing or reduce our expenditures. We may be unable to obtain such waivers, amendments or alternative or additional financing on a timely basis or at all, or on favorable terms.

A breach of the covenants under the 2020 Credit Agreement or the indenture that governs the Senior Notes could result in an event of default under the applicable indebtedness. Such a default may allow the creditors to accelerate the related debt and may result in the acceleration of any other debt to which a cross-acceleration provision applies. In the event the holders of the Senior Notes or our other debt accelerate the repayment of our borrowings, we and our subsidiaries may not have sufficient assets to repay that indebtedness.

Our borrowings under the 2020 Credit Agreement will carry a variable interest rate based on the EURIBOR or the LIBOR as a benchmark for establishing the rate of interest. LIBOR is the subject of recent national, international and other regulatory guidance and proposals for reform. The U.K. authority that regulates LIBOR announced that it will not compel banks to submit rates for the calculation of LIBOR after June 2023. The full impact of any transition away from LIBOR remains unclear. The 2020 Credit Agreement allows us and the administrative agent under the 2020 Credit Agreement to amend the 2020 Credit Agreement to replace LIBOR with one or more SOFR-based rates or another alternative benchmark rate. We may not be able to

agree with the administrative agent on a replacement reference rate that is as favorable as LIBOR, which may increase the cost of our borrowings under the 2020 Credit Agreement.

Our indebtedness increases our vulnerability to general adverse economic and industry conditions; requires us to dedicate a portion of our cash flow from operations to payments on indebtedness, reducing the availability of cash flow to fund capital expenditures, marketing and other general corporate activities; limits our ability to borrow additional funds; and may limit our flexibility in planning for, or reacting to, changes in our business and the industries in which we operate.

A lowering or withdrawal of the ratings assigned to our debt securities by rating agencies may increase our future borrowing costs, reduce our access to capital or result in the loss of certain covenant suspensions. Our debt rating could be lowered or withdrawn entirely by a rating agency if, in that rating agency's judgment, future circumstances relating to the basis of the rating, such as adverse changes, warrant. Any future lowering of our ratings likely would make it more difficult or more expensive for us to obtain additional debt financing.

In addition, during a Covenant Suspension Period, certain customary negative and affirmative covenants contained in the 2020 Credit Agreement are suspended, including the covenants restricting affiliate transactions, incurrence of indebtedness, investments, asset sales and restricted payments. A lowering of one or both of our investment grade ratings would result in increased compliance costs and would impose certain operating restrictions, either of which could be materially adverse to our operations and financial results.

Risks related to regulatory compliance and legal matters

Our actual or perceived failure to comply with privacy laws and standards could adversely affect our business, financial condition and results of operations. We depend on IT Systems. We own and manage some IT Systems but also rely on third-party service providers and vendors for a range of products and services, including cloud products/services, that are critical to internal and/or external customer-facing operations. In the course of our business, we and certain of our third-party providers collect, use, transmit and disclose Confidential Information.

As a result, we are subject to a variety of state, national and international laws and regulations that apply to the collection, use, retention, protection, disclosure, transfer and other processing of personal information, including, but not limited to, the GDPR and CCPA. These laws and regulations are evolving, with new or modified laws and regulations proposed and implemented frequently and existing laws and regulations subject to new or different interpretations. For example, the GDPR introduced new data protection requirements in the EU and imposes substantial fines for breaches of the data protection rules. The GDPR increased our responsibility and liability in relation to personal data that we process. The CCPA expands the rights of California residents to access and require deletion of their personal information, opt out of certain personal information sharing and receive detailed information about how their personal information is used. The CCPA also provides for civil penalties for violations, as well as a private right of action for data breaches that may increase data breach litigation. Many states have adopted, or are considering enacting, similar laws. For example, the CPRA went into effect in January 2023 (with a lookback period until January 2022). The CPRA builds on the CCPA and imposes additional obligations on covered businesses, including additional consumer rights processes, limitations on data uses, new audit requirements for higher risk data, and opt outs for certain uses and disclosure of sensitive personal information. The CPRA also created a new California data protection agency authorized to issue substantive regulations and could result in increased privacy, cybersecurity, and data protection enforcement. Similar laws are in motion in other states across the U S. For example, in 2021, Virginia enacted the VCDPA, which went into effect in January 2023, and Colorado enacted the CPA, which will go into effect in July 2023, both of which laws are comprehensive statutes that share similarities with the CCPA and CPRA. Recently, Utah enacted the UCPA, which goes into effect in 2023. Similar laws have been proposed, and likely will continue to be proposed, in other states and at the federal level, and if passed, may have potentially conflicting requirements that would make compliance challenging.

In addition to risks we face under privacy laws, we are subject to evolving consumer protection and marketing laws and increased litigation and government enforcement by the Federal Trade Commission and state Attorneys General. These agencies are aggressively interpreting and enforcing federal and state consumer protection laws in relation to very broad sales and marketing and advertising contexts. There are also federal laws covering our activities that are a source of potential liability for our business, including the CAN-SPAM Act, the TCPA, and the FCRA. In particular, any claims that we have violated the TCPA could be costly to litigate and could expose us to substantial statutory damages or settlement costs.

Any failure or alleged failure to comply with privacy, data protection or consumer protection laws could lead to government enforcement actions and litigation and significant penalties against us, and could materially adversely affect our reputation, business, financial condition, cash flows and results of operations. Compliance with any of the foregoing laws and regulations can be costly, can delay or impede the development of new products, and may require us to change the way we operate.

The interpretation and application of many privacy and data protection laws are uncertain. These laws may be interpreted and applied in a manner that is inconsistent with our existing data management practices or the features of our products. If so, in addition to the possibility of negative publicity, fines, lawsuits and other claims and penalties, we could be required to fundamentally change our business activities and practices or modify our products, which could harm our business.

Changes in tax laws, regulations or fiscal and tax policies or the manner of their interpretation or enforcement could adversely impact our financial performance. New tax laws or regulations, or changes in existing laws or regulations, or the manner of their interpretation or enforcement, could increase our cost of doing business. In addition, from time to time, U.S. and foreign tax authorities, including state and local governments, consider legislation that could increase our effective tax rate. For example, on August 16, 2022, President Biden signed into law the IRA, which includes a 15% book-income alternative minimum tax on corporations with average annual adjusted financial statement income over $1 billion for any three-year period ending with 2022 or later and a 1% excise tax on the fair market value of stock that is repurchased by publicly traded U.S. corporations. The alternative minimum tax and the excise tax are effective in taxable years beginning after December 31, 2022. While we are still awaiting further guidance, the IRA could have a material effect on our business and effective tax rate. Additionally, the U.S. Congress has advanced a variety of tax legislation proposals, and while the final form of any legislation is uncertain, the current proposals, if enacted, could have a material effect on our effective tax rate.

Third-party claims, litigation, regulatory proceedings or government investigations to which we are subject or in which we become involved, regardless of their merit, may significantly increase our expenses and adversely affect our stock price. From time to time we may be subject to third-party claims, lawsuits, regulatory proceedings or government investigations into whether our business practices comport with applicable law, which may include claims with respect to intellectual property, cybersecurity, privacy, data protection, antitrust, breach of contract, employment, mergers and acquisitions and other matters. Regardless of the merit of such claims, proceedings or investigations, defending against them could cost us a significant amount of time and money, result in negative publicity, and/or adversely affect our stock price. In addition, if any claims or proceedings are decided against us or if a settlement requires us to pay a large monetary amount or take other action that materially restricts or impedes our operations, our profitability could be significantly reduced and our financial position could be adversely affected.

We do not currently intend to pay dividends on our common stock and, consequently, your ability to achieve a return on your investment will depend on appreciation in the price of our common stock. We have never declared or paid any cash dividends on our common stock and do not intend to do so for the foreseeable future. We currently intend to invest our future earnings, if any, to finance our growth or share repurchases. In addition, provisions of the 2020 Credit Agreement governing our credit facilities limit our ability to pay cash dividends. Therefore, you are not likely to receive any dividends on your common stock for the foreseeable future and the success of an investment in shares of our common stock will depend upon any future appreciation in their value. There is no guarantee that shares of our common stock will appreciate in value or even maintain the price at which our stockholders have purchased their shares.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our headquarters is located at 1331 L Street, NW, in downtown Washington, DC, where we occupy approximately 169,093 square feet of office space, with a lease that expires on May 31, 2025 (with two five-year renewal options). Our headquarters is used primarily by our North America operating segment. Our principal facility in the U.K. is located in London, where we occupy 23,064 square feet of office space. Our lease for this facility has a term ending August 31, 2025. This facility is used by our International operating segment.

Our staff in Richmond, Virginia occupy an owned building located at 501 S 5th Street, where we occupy 276,695 square feet and lease out 33,912 square feet to another tenant through March of 2023; an owned building located at 901 Semmes Avenue, where we own and occupy 117,448 square feet; and leased space at 951 E Byrd St where we occupy 97,171 square feet. These locations house research, product development and sales functions. All of our owned properties are held under fee simple ownership and are not materially encumbered.

We also operate certain of our research, development and sales functions out of additional leased office spaces in Irvine, California; San Diego, California; and Atlanta, Georgia. Additionally, we lease office space in a variety of other metropolitan areas. These locations include, among others, the following: Hendersonville, Tennessee; Norfolk, Virginia; Boston, Massachusetts; New York, New York; San Francisco, California; and Los Angeles, California.

We believe these facilities are suitable and appropriately support our business needs.

Item 3. Legal Proceedings

Currently, and from time to time, we are involved in litigation incidental to the conduct of our business, including, among others, the legal actions discussed under “Contingencies” in Note 13 “Commitments and Contingencies” of the Notes to our Consolidated Financial Statements. While our management presently believes that the ultimate outcome of these proceedings, individually and in the aggregate, will not materially harm our business, financial position, future results of operations or liquidity, legal proceedings are inherently uncertain, and unfavorable rulings could, individually or in the aggregate, have a material adverse effect on our business, financial position, future results of operations or liquidity.

Item 4. Mine Safety Disclosures

Not Applicable.

PART II

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

Our common stock is traded on the Nasdaq Global Select Market under the symbol "CSGP." As of January 31, 2023, there were 1,731 holders of record of our common stock.

Dividend Policy. We have never declared or paid any dividends on our common stock. We do not anticipate paying any dividends on our common stock during the foreseeable future, but intend to retain any earnings for future growth of our business.

Recent Issues of Unregistered Securities. We did not issue any unregistered securities during the year ended December 31, 2022.

Issuer Purchases of Equity Securities. The following table is a summary of our repurchases of common stock for the quarter ended December 31, 2022:

ISSUER PURCHASES OF EQUITY SECURITIES

Month, 2022	Total Number of Shares Purchased [1]	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Number of Shares that May Yet Be Purchased Under the Plans or Programs
October 1 through 31	13,854	$ 70.67	—	—
November 1 through 30	17,151	82.68	—	—
December 1 through 31	4,026	81.26	—	—
Total	35,031	$ 77.77	—	—

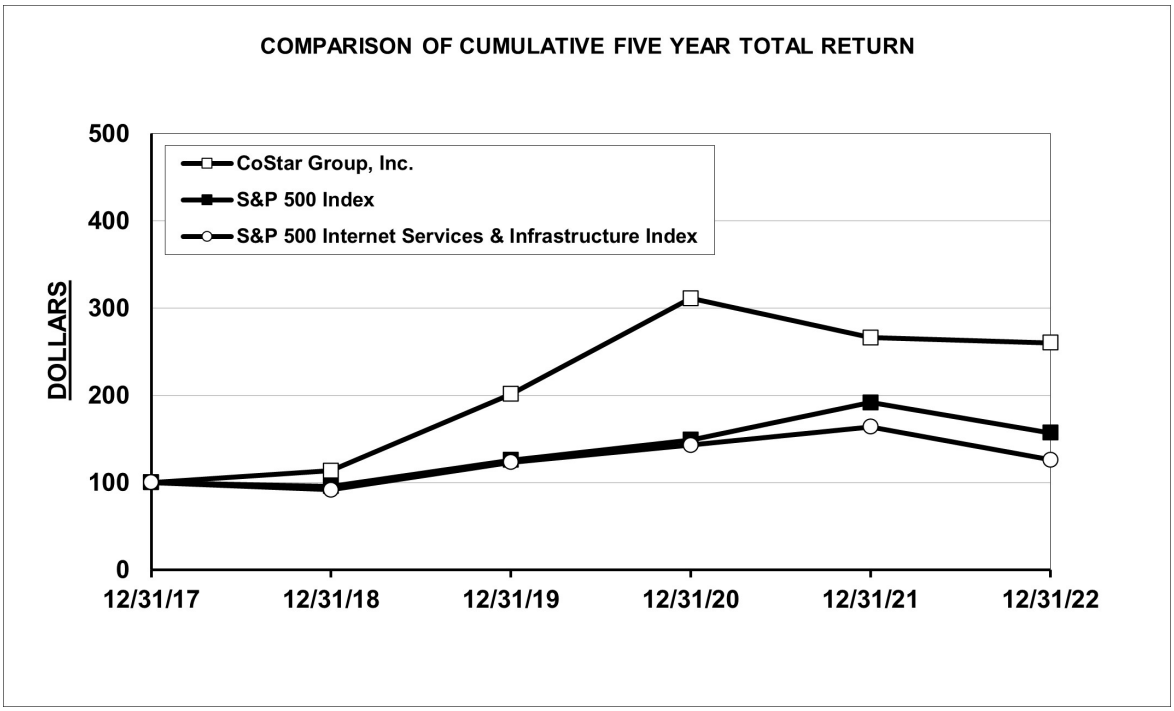
[1] The number of shares purchased consists of shares of common stock tendered by employees to the Company to satisfy the employees' minimum tax withholding obligations arising as a result of vesting of restricted stock grants under the Company's 2016 Stock Incentive Plan, as amended, which shares were purchased by the Company based on their fair market value on the trading day immediately preceding the vesting date. None of these share purchases were part of a publicly announced program to purchase common stock of the Company.

Stock Price Performance Graph

The stock performance graph below shows how an initial investment of $100 in our common stock would have compared to:

- An equal investment in the S&P 500 Index; and
- An equal investment in the S&P 500 Internet Services & Infrastructure Index.

The comparison covers the period beginning December 31, 2017 and ending on December 31, 2022, and assumes the reinvestment of any dividends. Note that this performance is historical and is not necessarily indicative of future price performance.



Company / Index	12/31/17	12/31/18	12/31/19	12/31/20	12/31/21	12/31/22
CoStar Group, Inc.	$ 100.00	$ 113.60	$ 201.48	$ 311.26	$ 266.14	$ 260.25
S&P 500 Index	100.00	95.62	125.72	148.85	191.58	156.88
S&P 500 Internet Services & Infrastructure Index	100.00	91.54	123.09	142.89	163.81	126.13

Item 6. Reserved

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

The following Management's Discussion and Analysis of Financial Condition and Results of Operations contains "forward-looking statements," including statements about our beliefs and expectations. There are many risks and uncertainties that could cause actual results to differ materially from those discussed in the forward-looking statements. Potential factors that could cause actual results to differ materially from those discussed in any forward-looking statements include, but are not limited to, those stated above in under the heading "Cautionary Statement Concerning Forward-Looking Statements" and in Item 1A. under the heading "Risk Factors," as well as those described from time to time in our filings with the SEC.

All forward-looking statements are based on information available to us on the date of this filing and we assume no obligation to update such statements, whether as a result of new information, future events or otherwise. The following discussion should be read in conjunction with our Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and other filings with the SEC and the consolidated financial statements and related notes included in this Report.

Overview

Our principal information, analytics and online marketplace services are described in the following paragraphs by type of service:

CoStar

CoStar is our subscription-based integrated platform for commercial real estate intelligence, which includes information about office, industrial, retail, multifamily, hospitality and student housing properties, properties for sale, comparable sales, tenants, space available for lease, industry professionals and their business relationships, industry news and market status and provides lease analytical, risk management, and hospitality benchmarking capabilities. CoStar's year-over-year revenue growth rate for 2022 accelerated compared to 2021. The number of subscribers has increased year-over-year and we have also realized the impact of price increases and existing customers upgrading to our global service offering. We expect CoStar's revenue growth rate for 2023 to slow compared to the revenue growth rate for 2022 as a result of less benefit from customer upgrades as the global product upgrade campaign is substantially complete and lower inflation-based price adjustments.

Information services

We provide real estate and lease management technology solutions, including lease administration, lease accounting and abstraction services, through our CoStar Real Estate Manager service offerings, as well as portfolio and debt analysis, management and reporting capabilities through our CoStar Risk Analytics service offerings. We also provide benchmarking and analytics for the hospitality industry both on a subscription basis and an ad hoc basis. We earn revenue on ad hoc transactions as reports or data are delivered to customers. We provide information services internationally, through our Business Immo, Belbex and Thomas Daily businesses in France, Spain and Germany, respectively. Information Services' year-over-year revenue growth rate for 2022 accelerated compared to 2021 as a result of increased revenue from CoStar Real Estate Manager services and the results of the Business Immo acquisition. We expect Information Services' revenue growth rate for 2023 to slow compared to the revenue growth rate for 2022 as a result of lower price adjustments.

Multifamily

Apartments.com is the flagship brand of our apartment marketing network of subscription-based advertising services and provides property management companies and landlords with a comprehensive advertising destination for their available rental units and offers renters a platform for searching for available rentals. This network also earns transaction-based revenue primarily from providing online tenant applications, including background and credit checks, and rental payment processing. Multifamily's year-over-year revenue growth rate for 2022 slowed compared to 2021 due to customers selecting lower-priced ad packages in the second half of 2021 while rental vacancy rates declined relative to historical averages reducing demand for top-level packages. Quarterly sales of multifamily products increased over 2022 due to new properties being added to the network and the impact of a new pricing strategy implemented to align prices at each product level with the value of the leads delivered. We expect Multifamily's year-over-year revenue growth rate for 2023 to accelerate compared to the revenue growth rate for 2022 due to expected increases in sales levels from bringing additional properties on the network.

LoopNet

Our LoopNet network of commercial real estate websites offer subscription-based, online marketplace services that enable commercial property owners, landlords and real estate agents working on their behalf to advertise properties for sale or for lease and to submit detailed information about property listings. Commercial real estate agents, buyers and tenants use the LoopNet network of online marketplace services to search for available property listings that meet their criteria. LoopNet's revenue growth rates slowed in 2022 when compared to 2021 as growth in the average price per listing declined in 2022 when compared to 2021. We expect LoopNet's year-over-year revenue growth rate for 2023 to accelerate compared to the revenue growth rate for 2022 due to expected increases in sales levels from increasing the number of listings in the network.

Residential

The acquisitions of Homes.com and Homesnap enabled us to expand our offerings to the residential for sale market. Homes.com is a homes for sale listings site. Homesnap is an online and mobile software platform that provides residential real estate professionals access to applications that manage residential real estate agent workflow and marketing campaigns delivered on third-party platforms. Homesnap also receives transaction-based revenue for short-term advertising delivered on third-party platforms. Residential revenue was consistent between 2022 and 2021. We expect residential revenue for 2023 to decrease when compared to 2022 due to the discontinuation of certain non-strategic products and services.

Other Marketplaces

Our other marketplaces include Ten-X, an online auction platform for commercial real estate that was acquired on June 24, 2020. Also included is our BizBuySell network, which includes BizQuest® and FindaFranchise and our Land.com Network of sites. The BizBuySell network provides online marketplaces for businesses and franchises for sale and our Land.com Network provides online marketplaces for rural lands for sale. Overall, other marketplaces' revenue growth rate slowed in 2022 compared to 2021 primarily due to the impact of the Ten-X acquisition closing in June 2020.We expect other marketplaces revenue growth rate for 2023 to slow compared to the growth rate for 2022 due to lower Ten-X transaction revenue.

Subscription-based Services

The majority of our revenue is generated from service offerings that are distributed to our clients under subscription-based agreements that typically renew automatically and have a term of at least one year. We recognize subscription revenues on a straight-line basis over the life of the contract.

For the years ended December 31, 2022, 2021 and 2020, our annualized net new bookings of subscription-based services on all contracts were approximately $305 million, $217 million and $184 million, respectively, calculated based on the annualized amount of change in our sales resulting from all new subscription-based contracts or upgrades on all existing subscription-based contracts, less write-downs and cancellations, for the period reported. Net new bookings is considered a key indicator of future subscription revenue growth and is also used as a metric of sales force productivity by us and investors. However, information regarding net new bookings is not comparable to, nor should it be substituted for, an analysis of our revenues over time. Revenue from our subscription-based contracts was approximately 93%, 93% and 95% of total revenue for the years ended December 31, 2022, 2021 and 2020, respectively. The declines in the percentage of our revenue from subscription-based contracts from 2020 to 2021 was primarily due to the acquisitions of companies that contained a higher percentage of transaction-based revenue than our legacy businesses.

For the trailing 12 months ended December 31, 2022, 2021 and 2020, our contract renewal rates for existing CoStar Group company-wide subscription-based services for contracts with a term of at least one year were approximately 90%, 92% and 89%, respectively; and, therefore, our cancellation rates for those services for the same periods were approximately 10%, 8% and 11%, respectively. Our contract renewal rate is a quantitative measurement that is typically closely correlated with our revenue results. As a result, we believe that the rate may be a reliable indicator of short-term and long-term performance absent extraordinary circumstances. Our trailing 12-month contract renewal rate may decline as a result of negative economic conditions, consolidations among our clients, reductions in customer spending or decreases in our customer base. Revenue from our subscription-based contracts with a term of at least one year was approximately 80%, 77% and 80% of total revenue for the trailing 12 months ended December 31, 2022, 2021 and 2020, respectively. The increase in the percentage of our revenue from subscription-based contracts for contracts with a term of at least one year from 2021 to 2022 was due to increases in sales of longer term advertising products. The decrease in the percentage of our revenue from subscription-based contracts with a term of at least one year from 2020 to 2021 was primarily due to the acquisitions of companies that contained a higher percentage of transaction-based revenue than our legacy businesses, as well as increases in sales of shorter term advertising products.

Impacts of Current Economic Conditions

In response to the concerns over inflation risk, the U.S. Federal Reserve has raised interest rates in the first, second, third and fourth quarters of 2022 and the first quarter of 2023 and signaled it expects additional rate increases. Further, the COVID-19 pandemic has created significant economic volatility, uncertainty and disruption around the world. While the impacts of the COVID-19 pandemic and current economic conditions continue to evolve, they have not materially affected our consolidated financial statements during 2022, 2021 and 2020. It is currently unclear how the commercial real estate industry will ultimately be impacted by the COVID-19 pandemic as businesses formulate and execute plans for employees to return to the office, implement hybrid work arrangements – allowing work from the office or home, or switch to all work from home, or by the current economic conditions. These activities may result in reduced demand for office space and rising interest rates may reduce demand for all types of real estate. If the demand for office space or other real estate decreases significantly, there could be a downturn in the commercial real estate market that may materially adversely affect many of our clients. A depressed commercial real estate market would have a negative impact on our core customer base, which could impact our customers' ability to subscribe and pay for our services and reduce demand for our services. Reduced demand and increased cancellations could cause our revenues or our revenue growth rates to decline and reduce our profitability.

Development, Investments and Expansion

We plan to continue to invest in our business and our services, evaluate strategic growth opportunities and pursue our key priorities as described below. We are committed to supporting, improving and enhancing our information, analytics and online marketplace solutions, including expanding and improving our offerings for our client base and site users, including property owners, property managers, buyers, commercial tenants and residential renters and buyers. We expect to continue our software development efforts to improve existing services, introduce new services, integrate and cross-sell services, integrate recently completed acquisitions and expand and develop supporting technologies for our research, sales and marketing organizations. We may reevaluate our priorities as economic conditions continue to evolve.

Our key priorities for 2023 currently include:

- Continuing to develop and invest in the Homes.com residential marketplace. Our residential strategy involves creating new and improved tools for residential agents and brokers and to help homebuyers find a new home and connect with the agents of their choosing. We plan to increase our residential marketing investment over the course of the year to build traffic on the website.

- Continuing to invest in our LoopNet marketplace and international business. We plan to invest in additional sales capabilities and increase marketing investment to accelerate revenue growth in LoopNet. This includes expansion of our LoopNet brand in the U.K., France and Spain.

- Continuing to invest in CoStar, including:

    - Enhancing benchmarking capabilities. We continue to integrate the STR products into our core platform. We plan to apply STR's benchmarking expertise within CoStar by making STAR reports available in the CoStar environment and provide users with tools to perform ad hoc analysis.

    - Enhancing analytics capabilities. We are adding information on commercial property investment funds and linking property data to allow fund investors to perform detailed analysis on their property portfolios directly in the CoStar platform.

We expect our investment in these priorities, and the full-year impact realized in 2023 from an increase in our sales force which occurred primarily in the second half of 2022, will increase our selling and marketing expense and reduce our income from operations for the year ended December 31, 2023 compared to the year ended December 31, 2022. We intend to continue to assess the need for additional investments in our business in order to develop and distribute new services and functionality within our current platform or expand the reach of, or otherwise improve, our current service offerings. Any future product development or expansion of services, combination and coordination of services or elimination of services or corporate expansion, development or restructuring efforts could reduce our profitability and increase our capital expenditures. Any new investments, changes to our service offerings or other unforeseen events could cause us to experience reduced revenues or generate losses and negative cash flow from operations in the future. Any development efforts must comply with our credit facility, which contains restrictive covenants that restrict our operations and use of our cash flow and may prevent us from taking certain actions that we believe could increase our profitability or otherwise enhance our business.

For further discussion of our Company, strategy and products, see our business overview set forth in "Item 1. Business" in this Report.

Non-GAAP Financial Measures

We prepare and publicly release quarterly unaudited financial statements prepared in accordance with GAAP. We also disclose and discuss certain non-GAAP financial measures in our public releases, investor conference calls and filings with the SEC. The non-GAAP financial measures that we may disclose include EBITDA, adjusted EBITDA, adjusted EBITDA margin, non-GAAP net income and non-GAAP net income per diluted share. EBITDA is our net income before interest (expense) income, other (expense) income, loss on debt extinguishment, income taxes, depreciation and amortization. We typically disclose EBITDA on a consolidated and an operating segment basis in our earnings releases, investor conference calls and filings with the SEC. Adjusted EBITDA is different from EBITDA because we further adjust EBITDA for stock-based compensation expense, acquisition- and integration-related costs, restructuring costs and settlements and impairments incurred outside our ordinary course of business. Adjusted EBITDA margin represents adjusted EBITDA divided by revenues for the period. Non-GAAP net income is determined by adjusting our net income for stock-based compensation expense, acquisition- and integration-related costs, restructuring costs, settlement and impairment costs incurred outside our ordinary course of business and loss on debt extinguishment, as well as amortization of acquired intangible assets and other related costs, and then subtracting an assumed provision for income taxes. Non-GAAP net income per diluted share is a non-GAAP financial measure that represents non-GAAP net income divided by the number of diluted shares outstanding for the period used in the calculation of GAAP net income per diluted share.

We may disclose adjusted EBITDA, adjusted EBITDA margin, non-GAAP net income and non-GAAP net income per diluted share on a consolidated basis in our earnings releases, investor conference calls and filings with the SEC. The non-GAAP financial measures that we use may not be comparable to similarly titled measures reported by other companies. Also, in the future, we may disclose different non-GAAP financial measures in order to help our investors meaningfully evaluate and compare our results of operations to our previously reported results of operations or to those of other companies in our industry.

We view EBITDA, adjusted EBITDA, adjusted EBITDA margin, non-GAAP net income and non-GAAP net income per diluted share as operating performance measures. We believe that the most directly comparable GAAP financial measure to EBITDA, adjusted EBITDA and non-GAAP net income is net income. We believe the most directly comparable GAAP financial measures to non-GAAP net income per diluted share and adjusted EBITDA margin are net income per diluted share and net income divided by revenue, respectively. In calculating EBITDA, adjusted EBITDA, adjusted EBITDA margin, non-GAAP net income and non-GAAP net income per diluted share, we exclude from net income the financial items that we believe should be separately identified to provide additional analysis of the financial components of the day-to-day operation of our business. We have outlined below the type and scope of these exclusions and the material limitations on the use of these non-GAAP financial measures as a result of these exclusions. EBITDA, adjusted EBITDA, adjusted EBITDA margin, non-GAAP net income and non-GAAP net income per diluted share are not measurements of financial performance under GAAP and should not be considered as a measure of liquidity, as an alternative to net income or as an indicator of any other measure of performance derived in accordance with GAAP. Investors and potential investors in our securities should not rely on EBITDA, adjusted EBITDA, adjusted EBITDA margin, non-GAAP net income and non-GAAP net income per diluted share as a substitute for any GAAP financial measure, including net income and net income per diluted share. In addition, we urge investors and potential investors in our securities to carefully review the GAAP financial information included as part of our Annual Reports on Form 10-K and Quarterly Reports on Form 10-Q that are filed with the SEC, as well as our quarterly earnings releases, and compare the GAAP financial information with our EBITDA, adjusted EBITDA, adjusted EBITDA margin, non-GAAP net income and non-GAAP net income per diluted share.

EBITDA, adjusted EBITDA, adjusted EBITDA margin, non-GAAP net income and non-GAAP net income per diluted share may be used by management to internally measure our operating and management performance and may be used by investors as supplemental financial measures to evaluate the performance of our business. We believe that these non-GAAP measures, when viewed with our GAAP results and accompanying reconciliations, provide additional information to investors that is useful to understand the factors and trends affecting our business without the impact of certain acquisition-related items. We have spent more than 30 years building our database of commercial real estate information and expanding our markets and services partially through acquisitions of complementary businesses. Due to these acquisitions, our net income has included significant charges for amortization of acquired intangible assets, depreciation and other amortization, acquisition- and integration-related costs, restructuring costs and loss on debt extinguishment. Adjusted EBITDA, adjusted EBITDA margin, non-GAAP net income and non-GAAP net income per diluted share exclude these charges and provide meaningful information about the operating performance of our business, apart from charges for amortization of acquired intangible assets, depreciation and other amortization, acquisition- and integration-related costs, restructuring costs; settlement and impairment costs incurred outside our ordinary course of business. We believe the disclosure of non-GAAP measures can help investors meaningfully

evaluate and compare our performance from quarter-to-quarter and from year-to-year without the impact of these items. We also believe the non-GAAP measures we disclose are measures of our ongoing operating performance because the isolation of non-cash charges, such as amortization and depreciation, and other items, such as interest (expense) income, other (expense) income, income taxes, stock-based compensation expenses, acquisition- and integration-related costs, restructuring costs, loss on debt extinguishment and settlement and impairment costs incurred outside our ordinary course of business, provides additional information about our cost structure, and, over time, helps track our operating progress. In addition, investors, securities analysts and others have regularly relied on EBITDA and may rely on adjusted EBITDA, adjusted EBITDA margin, non-GAAP net income or non-GAAP net income per diluted share to provide a financial measure by which to compare our operating performance against that of other companies in our industry.

Set forth below are descriptions of financial items that have been excluded from net income to calculate EBITDA and the material limitations associated with using this non-GAAP financial measure as compared to net income:

- Amortization of acquired intangible assets in cost of revenues may be useful for investors to consider because it represents the diminishing value of any acquired trade names and other intangible assets and the use of our acquired technology, which is one of the sources of information for our database of commercial real estate information. We do not believe these charges necessarily reflect the current and ongoing cash charges related to our operating cost structure.

- Amortization of acquired intangible assets in operating expenses may be useful for investors to consider because it represents the estimated attrition of our acquired customer base. We do not believe these charges necessarily reflect the current and ongoing cash charges related to our operating cost structure.

- Depreciation and other amortization may be useful for investors to consider because they generally represent the wear and tear on our property and equipment used in our operations. We do not believe these charges necessarily reflect the current and ongoing cash charges related to our operating cost structure.

- The amount of interest (expense) income and other (expense) income we generate and incur may be useful for investors to consider and may result in current cash inflows and outflows. However, we do not consider the amount of interest (expense) income and other (expense) income to be a representative component of the day-to-day operating performance of our business.

- Income tax expense may be useful for investors to consider because it generally represents the taxes which may be payable for the period and the change in deferred income taxes during the period and may reduce the amount of funds otherwise available for use in our business. However, we do not consider the amount of income tax expense to be a representative component of the day-to-day operating performance of our business.

- The amount of loss on our debt extinguishment may be useful for investors to consider because it generally represents losses from the early extinguishment of debt. However, we do not consider the amount of the loss on debt extinguishment to be a representative component of the day-to-day operating performance of our business.

Set forth below are descriptions of additional financial items that have been excluded from EBITDA to calculate adjusted EBITDA and the material limitations associated with using this non-GAAP financial measure as compared to net income:

- Stock-based compensation expense may be useful for investors to consider because it represents a portion of the compensation of our employees and executives. Determining the fair value of the stock-based instruments involves a high degree of judgment and estimation and the expenses recorded may bear little resemblance to the actual value realized upon the future exercise or termination of the related stock-based awards. Therefore, we believe it is useful to exclude stock-based compensation in order to better understand the long-term performance of our core business.

- The amount of acquisition- and integration-related costs incurred may be useful for investors to consider because such costs generally represent professional service fees and direct expenses related to acquisitions. Because we do not acquire businesses on a predictable cycle, we do not consider the amount of acquisition- and integration-related costs to be a representative component of the day-to-day operating performance of our business.

- The amount of settlement and impairment costs incurred outside of our ordinary course of business may be useful for investors to consider because they generally represent gains or losses from the settlement of litigation matters, charges

related to terminations of contracts or impairments of acquired intangible assets or other long lived assets. We do not believe these charges necessarily reflect the current and ongoing cash charges related to our operating cost structure.

- The amount of restructuring costs incurred may be useful for investors to consider because they generally represent costs incurred in connection with a change in a contract or a change in the makeup of our properties or personnel. We do not consider the amount of restructuring related costs to be a representative component of the day-to-day operating performance of our business.

The financial items that have been excluded from our net income to calculate non-GAAP net income and non-GAAP net income per diluted share are amortization of acquired intangible assets and other related costs, stock-based compensation, acquisition- and integration-related costs, restructuring and related costs and settlement and impairment costs incurred outside our ordinary course of business. These items are discussed above with respect to the calculation of adjusted EBITDA together with the material limitations associated with using this non-GAAP financial measure as compared to net income. In addition to these exclusions from net income, we subtract an assumed provision for income taxes to calculate non-GAAP net income. In 2022 and 2021, we assumed a 26% and 25% tax rate, respectively, which approximated our historical long-term statutory corporate tax rate, excluding the impact of discrete items.

Management compensates for the above-described limitations of using non-GAAP measures by using a non-GAAP measure only to supplement our GAAP results and to provide additional information that is useful to investors to understand the factors and trends affecting our business.

The following table shows our net income reconciled to our EBITDA and our net cash flows from operating, investing and financing activities for the indicated periods (in thousands):

	Year Ended December 31,		
	2022	**2021**	**2020**
Net income	$ 369,453	$ 292,564	$ 227,128
Amortization of acquired intangible assets in cost of revenues	29,019	28,809	25,675
Amortization of acquired intangible assets in operating expenses	73,560	74,817	62,457
Depreciation and other amortization	29,127	29,018	28,812
Interest (income) expense, net	(32,125)	31,621	17,395
Other (income) expense, net	(3,383)	(3,252)	827
Income tax expense	117,004	111,404	43,852
EBITDA	$ 582,655	$ 564,981	$ 406,146
Net cash provided by (used in)			
Operating activities	$ 478,620	$ 469,731	$ 486,106
Investing activities	$ (69,055)	$ (381,343)	$ (464,163)
Financing activities	$ 733,977	$ (15,679)	$ 2,662,297

Consolidated Results of Operations

The following table provides our selected consolidated results of operations for the indicated periods (in thousands and as a percentage of total revenue):

	Year Ended December 31,					
	2022		2021		2020	
Revenues	$ 2,182,399	100 %	$ 1,944,135	100 %	$ 1,659,019	100 %
Cost of revenues	414,008	19	357,241	18	308,968	19
Gross profit	1,768,391	81	1,586,894	82	1,350,051	81
Operating expenses:						
Selling and marketing (excluding customer base amortization)	684,222	31	622,007	32	535,778	32
Software development	220,923	10	201,022	10	162,916	10
General and administrative	338,737	16	256,711	13	299,698	18
Customer base amortization	73,560	3	74,817	4	62,457	4
Total operating expenses	1,317,442	60	1,154,557	59	1,060,849	64
Income from operations	450,949	21	432,337	22	289,202	17
Interest income (expense), net	32,125	1	(31,621)	(2)	(17,395)	(1)
Other income (expense), net	3,383	—	3,252	—	(827)	—
Income before income taxes	486,457	22	403,968	21	270,980	16
Income tax expense	117,004	5	111,404	6	43,852	3
Net income	$ 369,453	17 %	$ 292,564	15 %	$ 227,128	14 %

The following table provides our revenues by type of service (in thousands and as a percentage of total revenue):

	Year Ended December 31,					
	2022		2021		2020	
CoStar	$ 836,980	38 %	$ 722,821	37 %	$ 664,735	40 %
Information services	157,382	7	141,655	7	130,070	8
Multifamily	745,388	34	678,680	35	598,555	36
LoopNet[1]	230,941	11	207,511	11	179,805	11
Residential[1]	73,747	3	74,583	4	—	—
Other Marketplaces[1]	137,961	6	118,885	6	85,854	5
Total revenues[2]	$ 2,182,399	100%	$ 1,944,135	100%	$ 1,659,019	100%

[1] As of September 30, 2021, Commercial Property and Land revenue has been further disaggregated into LoopNet, Residential and Other Marketplaces. Prior period amounts have been adjusted to reflect this presentation.

[2] For further discussion of our Company, strategy and products, see our business overview set forth in "Item 1. Business" in this Report.

Comparison of Year Ended December 31, 2022 and Year Ended December 31, 2021

The following table provides a comparison of our selected consolidated results of operations for the years ended December 31, 2022 and 2021 (in thousands):

	2022	2021	Increase (Decrease)	Increase (Decrease)
Revenues:				
CoStar	$ 836,980	$ 722,821	$ 114,159	16%
Information services	157,382	141,655	15,727	11
Multifamily	745,388	678,680	66,708	10
LoopNet	230,941	207,511	23,430	11
Residential	73,747	74,583	(836)	(1)
Other Marketplaces	137,961	118,885	19,076	16
Total revenues	2,182,399	1,944,135	238,264	12
Cost of revenues	414,008	357,241	56,767	16
Gross profit	1,768,391	1,586,894	181,497	11
Operating expenses:				
Selling and marketing (excluding customer base amortization)	684,222	622,007	62,215	10
Software development	220,923	201,022	19,901	10
General and administrative	338,737	256,711	82,026	32
Customer base amortization	73,560	74,817	(1,257)	(2)
Total operating expenses	1,317,442	1,154,557	162,885	14
Income from operations	450,949	432,337	18,612	4
Interest income (expense), net	32,125	(31,621)	(63,746)	NM
Other income, net	3,383	3,252	131	4
Income before income taxes	486,457	403,968	82,489	20
Income tax expense	117,004	111,404	5,600	5
Net income	$ 369,453	$ 292,564	$ 76,889	26%

NM - Not meaningful

Revenues. Revenues increased to $2.2 billion in 2022, from $1.9 billion in 2021. The $238 million increase was attributable to increases across nearly all of our primary service offerings, led by a $114 million, or 16%, increase in CoStar revenue. The CoStar revenue increase was due to higher sales volume driven by the impact of annual price increases and customer upgrades on contract renewals, as well as, an increase in subscribers. Multifamily revenues increased $67 million, or 10%, primarily due to increases in pricing on renewals and, to a lesser extent, an increase in properties listed. LoopNet revenues increased $23 million, or 11%, primarily as a result of an increase in average prices and, to a lesser extent, due to the acquisition of BureauxLocaux. Other marketplaces revenue increased $19 million, or 16%, primarily driven by increases in Ten-X and Land for Sale revenue and, to a lesser extent, an increase in revenue for BizBuySell. Information services revenue increased $16 million, or 11%, primarily due to increased revenues from our CoStar Real Estate Manager and STR service offerings.

Gross Profit. Gross profit increased to $1.8 billion in 2022, from $1.6 billion in 2021. The gross profit percentage was 81% for 2022 compared to 82% for 2021. The increase in gross profit was due to higher revenue, partially offset by an increase in cost of revenues of $57 million, or 16%, mostly due to an increase of $28 million related to our investment and further development of our residential marketplaces, including personnel, research equipment, software and equipment, and data and content costs. There were also increases in costs supporting our other service offerings, including $19 million in personnel costs, driven by an increase in salaries, $6 million in software and equipment to support our researchers, $3 million in professional services and $2 million in travel expenses.

Selling and Marketing Expenses. Selling and marketing expenses increased to $684 million in 2022, from $622 million in 2021. The $62 million increase was mostly attributable to an increase of $40 million in personnel costs, due to a $21 million increase in salaries, driven by an increase in headcount, and an increase in commission expense of $13 million. There were also

increases of $17 million in conferences and travel costs and $2 million each for occupancy, and computer equipment and other office supplies.

Software Development Expenses. Software development expenses increased to $221 million in 2022, from $201 million in 2021, and remained consistent as a percentage of revenues at 10% in 2022 and 2021. The $20 million increase was primarily due to an increase of $16 million in personnel costs, driven by increased headcount to support the development of our products, and to a lesser extent, to increases of $2 million in occupancy costs, and of $1 million in computer equipment and other office supplies.

General and Administrative Expenses. General and administrative expenses increased to $339 million in 2022, from $257 million in 2021, and increased as a percentage of revenues to 16% in 2022 from 13% in 2021. The $82 million increase in the amount of general and administrative expense was driven by an increase of $22 million in personnel costs, primarily due to increases in salaries and stock-based compensation expense, and to a lesser extent, increases of $16 million in professional services, driven by an increase in legal costs, $10 million in travel and conferences costs, driven partially by an increase in the average cost of air travel, $8 million in software and equipment, and $7 million in bad debt expense, and $2 million each in property taxes and charitable donations. Other non-recurring charges incurred in 2022 included, $9 million due to impairments of right-of-use assets and property and equipment related to abandoned leases, and $4 million for a fee paid to counterparty to terminate a contract. The increase in general and administrative expense was partially offset by a $3 million gain recognized for the sale of a corporate aircraft.

Customer Base Amortization Expense. Customer base amortization expense decreased to $74 million in 2022, from $75 million in 2021, and decreased as a percentage of revenues at 3% in 2022 from 4% in 2021. The decrease in customer base amortization expense was primarily attributable to decreases in amortization expense related to the customer base intangible assets acquired in the acquisitions of ForRent, Ten-X, STR and LoopNet, which had been amortizing on an accelerated basis since their acquisitions, partially offset by an increase of $13 million in amortization expense driven by intangible assets related to a Homesnap product for which we decided to eliminate usage fees related to a specific customer class.

Interest Income (Expense), net. Interest income, net was $32 million in 2022, as compared to interest expense, net of $32 million in 2021. The increase of $64 million in 2022 was primarily due to an increased rate of return on cash and cash equivalents.

Other Income, net. Other income, net was a net income of $3 million in 2022, consistent with net income of $3 million in 2021.

Income Tax Expense. Income tax expense increased to $117 million in 2022, from $111 million in 2021, as a result of higher income before income taxes, the release of reserves due to recent audit settlements which were recorded in 2021, and lower excess tax benefits on option exercises for the year ended December 31, 2022, partially offset by a decrease due to a gain recognized for the year ended December 31, 2021 related to an international restructuring.

For a comparison of our results of operations for the fiscal year ended December 31, 2021 to the year ended December 31, 2020, see Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations in our Report for the year ended December 31, 2021, which was filed with the SEC on February 23, 2022.

Comparison of Business Segment Results for Year Ended December 31, 2022 and Year Ended December 31, 2021

We manage our business geographically in two operating segments, with the primary areas of measurement and decision-making being North America, which includes the U.S. and Canada, and International, which primarily includes Europe, Asia-Pacific and Latin America. Management relies on an internal management reporting process that provides revenue and operating segment EBITDA, which is our net income before interest income (expense) and other income (expense), loss on debt extinguishment, income taxes, depreciation and amortization. Management believes that operating segment EBITDA is an appropriate measure for evaluating the operational performance of our operating segments. EBITDA is used by management to internally measure operating and management performance and to evaluate the performance of the business. However, this measure should be considered in addition to, not as a substitute for or superior to, income from operations or other measures of financial performance prepared in accordance with GAAP.

Segment Revenues. North America revenues increased to $2.1 billion for the year ended December 31, 2022, from $1.9 billion for the year ended December 31, 2021. The $138 million increase in North America revenues was attributable to increases in revenues for several of our services. CoStar revenues increased $113 million due to higher sales volume driven by the impact of annual price increases and customer upgrades on contract renewals, as well as an increase in subscribers.

Multifamily revenues increased $67 million, primarily due to increases in pricing on renewals and, to a lesser extent, an increase in properties listed. Other marketplaces revenue increased $19 million primarily driven by increases in Ten-X and Land for Sale revenue and, to a lesser extent, an increase in revenue for BizBuySell. LoopNet revenues increased $19 million, primarily as a result of stronger site traffic, which drove an increase in the price per advertisement as compared to the prior year. Information services revenue increased $11 million primarily due to increases of $7 million and $4 million in revenue for our CoStar Real Estate Manager and STR service offerings, respectively. International revenues increased to $76 million in 2022, from $67 million in 2021. The $10 million increase in International revenues was driven by increases in sales of LoopNet products, including the acquisition of BureauxLocaux, and, to a lesser extent, increased revenue from the acquisition of Business Immo.

Segment EBITDA. North America EBITDA increased to $577 million for the year ended December 31, 2022, from $557 million for the year ended December 31, 2021. The increase in North America EBITDA was primarily due to an increase in revenue and a decrease in marketing costs, partially offset by increases in general and administrative and personnel costs. International EBITDA decreased to $5 million for the year ended December 31, 2022 from $8 million for the year ended December 31, 2021. The decrease was due to increased personnel, general and administrative, and marketing costs, partially offset by, an increase in revenue.

For a comparison of our business segment results of operations for the fiscal year ended December 31, 2021 to the year ended December 31, 2020, see Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations in our Report for the year ended December 31, 2021, which was filed with the SEC on February 23, 2022.

Liquidity and Capital Resources

We believe the balance of cash and cash equivalents, which was $5.0 billion as of December 31, 2022, along with cash generated by ongoing operations and continued access to capital markets, will be sufficient to satisfy our cash requirements over the next 12 months and beyond. Our material cash requirements include the following contractual and other obligations.

Debt. As of December 31, 2022, we had outstanding an aggregate principal amount of $1.0 billion of Senior Notes due July 15, 2030. Future interest payments associated with the Senior Notes are $224 million, with $28 million payable within 12 months.

Leases. We have lease arrangements for office facilities, data centers and certain vehicles. As of December 31, 2022, we had fixed lease payment obligations of $118 million, with $39 million payable within 12 months.

Purchase Obligations. Our purchase obligations are associated with agreements that are enforceable and legally binding and that specify all significant terms, including fixed or minimum services to be used, fixed, minimum or variable price provisions, and the approximate timing of the transaction and have an original term greater than one year. The services acquired under these agreements primarily relate to web hosting, third-party data or listings and software subscriptions. As of December 31, 2022, we had purchase obligations of $85 million, with $45 million payable within 12 months.

Construction Commitments. We plan to expand our Richmond, Virginia campus which is expected to result in a material cash requirement in 2023 and beyond. We broke ground on the expansion in November 2022 and expect construction to be completed in 2025. We negotiated various tax incentives with the Commonwealth of Virginia and the City of Richmond including the allowance to use market-based income apportionment for income taxes and partial reimbursements of property tax assessments related to the value of the campus expansion. These incentives are conditional upon achieving job creation and capital expenditure targets from 2022 to 2029. Failure to meet these targets, could result in a reduction of the value of the tax incentives and repayment of previous tax reductions. The value of the incentives is dependent on our expected taxable income.

We expect the total cost of construction, net of the estimated value of the tax incentives from 2023 to 2032, to be in the range of $450 – $550 million. We have engaged a project manager, architects and a general contractor on terms that generally require payments as services are provided or construction is performed. As of December 31, 2022, we have paid $17 million and we have committed to spend an additional $148 million as further work is performed under these contracts. We plan to amend these contracts to include additional commitments as construction progresses. Total cash expenditures for 2023 are expected to be approximately $200 million. We expect to fund the expansion with cash on hand.

Our future capital requirements will depend on many factors, including, among others, our operating results, expansion and integration efforts and our level of acquisition activity or other strategic transactions. To date, we have grown in part by acquiring other companies, and we expect to continue to make acquisitions.

Cash and cash equivalents increased to $5.0 billion as of December 31, 2022, compared to cash and cash equivalents of $3.8 billion as of December 31, 2021. The increase in cash and cash equivalents for the year ended December 31, 2022 was primarily due to $746 million of net proceeds from our September 2022 equity offering and cash flow from operations of $479 million.

Net cash provided by operating activities for the year ended December 31, 2022 was $479 million compared to $470 million for the year ended December 31, 2021. The $9 million increase was due to an increase in net income, excluding certain non-cash expenses such as amortization of deferred commission costs and stock-based compensation expense, partially offset by, a increase in working capital, excluding cash, of $51 million driven by an increase in capitalized commissions and decreases in income taxes payable, accounts receivable, and deferred revenue, partially offset by an increase in accounts payable and other accrued liabilities driven by payment of the $52 million termination fee pursuant to the Asset Purchase Agreement with RentPath in the first quarter of 2021.

Net cash used in investing activities for the year ended December 31, 2022 was $69 million compared to $381 million for the year ended December 31, 2021. The $312 million decrease in cash used in investing activities was primarily due to a decrease in cash paid for acquisitions of $187 million and for purchases of property, equipment and other assets including Richmond assets of $95 million, as well as, an increase in proceeds from sale of property and equipment and other assets of $29 million

Net cash provided by financing activities for the year ended December 31, 2022 was $734 million compared to net cash used in financing activities of $16 million for the year ended December 31, 2021. The increase in cash provided by financing activities was primarily due to $746 million of net proceeds from our September 2022 equity offering.

As permitted under the Coronavirus Aid, Relief and Economic Security Act, we deferred payroll taxes due in 2020; all amounts deferred were paid during the year ended December 31, 2021.

Critical Accounting Policies and Estimates

The preparation of financial statements and related disclosures in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements and revenues and expenses during the period reported. The following accounting policies involve a “critical accounting estimate” because they are particularly dependent on estimates and assumptions made by management about matters that are highly uncertain at the time the accounting estimates are made. In addition, while we have used our best estimates based on facts and circumstances available to us at the time, different acceptable assumptions would yield different results. Changes in the accounting estimates are reasonably likely to occur from period to period, which may have a material impact on the presentation of our financial condition and results of operations. We review these estimates and assumptions periodically and reflect the effects of revisions in the period that they are determined to be necessary. We consider policies relating to the following matters to be critical accounting policies:

- Long-lived assets, intangible assets and goodwill;
- Income taxes;
- Revenue recognition; and
- Business combinations.

With respect to our accounting policy for long-lived assets, intangible assets and goodwill, we further supplement in Note 2 of the Notes to the Consolidated Financial Statements included in this Report with the following:

We assess the impairment of long-lived assets, identifiable intangibles and goodwill whenever events or changes in circumstances indicate that the carrying value may not be recoverable. Judgments made by management relate to the expected useful lives of long-lived assets and our ability to recover the carrying value of such assets. The accuracy of these judgments may be adversely affected by several factors, including the factors listed below:

- Significant underperformance relative to historical or projected future operating results;
- Significant changes in the manner of our use of the acquired assets or the strategy for our overall business;
- Significant negative industry or economic trends; or
- Significant decline in our market capitalization relative to net book value for a sustained period.

When we determine that the carrying value of long-lived and identifiable intangible assets may not be recovered based upon the existence of one or more of the above indicators, we test for impairment.

Goodwill and identifiable intangible assets that are not subject to amortization are tested annually for impairment by each reporting unit on October 1 of each year and are also tested for impairment more frequently based upon the existence of one or more of the above indicators.

Goodwill represents the future economic benefits arising from a business combination and is calculated as the excess of purchase consideration paid in a business combination over the fair value of assets of the net identifiable assets acquired. Goodwill is not amortized, but instead tested for impairment at least annually by each reporting unit, or more frequently if an event or other circumstance indicates that the fair value of a reporting unit may be below its carrying amount. We may first assess qualitative factors to evaluate whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount, or elect to bypass the qualitative assessment. If it is determined that it is more likely than not that the fair value of a reporting unit is less than its carrying value, or we elect to bypass the qualitative assessment, we then perform a quantitative assessment by determining the fair value of each reporting unit. We estimate the fair value of each reporting unit based on a projected discounted cash flow model that includes significant assumptions and estimates including our discount rate, growth rate and future financial performance. Assumptions about the discount rate are based on a weighted average cost of capital for comparable companies and determined by management to be commensurate with the risk in our current business model. Assumptions about the growth rate and future financial performance of a reporting unit are based on our forecasts, business plans, economic projections and anticipated future cash flows. These assumptions are subject to change from period-to-period and could be adversely impacted by the uncertainty surrounding global market conditions, commercial real estate conditions and the competitive environment in which we operate. Changes in these or other factors could negatively affect our reporting units' fair value and potentially result in impairment charges. Such impairment charges could have an adverse effect on our results of operations. The fair value of each reporting unit is compared to the carrying amount of the reporting unit. If the carrying value of the reporting unit exceeds the fair value, then an impairment loss is recognized for the difference.

As of October 1, 2022, we performed an assessment of the relevant qualitative factors for our North America and International reporting units and concluded that it was not more likely than not that the fair value of each reporting unit was less

than its respective carrying amounts. There have been no events or changes in circumstances as a result of our qualitative impairment analysis on October 1, 2022, that would indicate that the carrying value of each reporting unit may not be recoverable.

For an in-depth discussion of each of our significant accounting policies, including our critical accounting policies and further information regarding estimates and assumptions involved in their application, see Note 2 of the Notes to the Consolidated Financial Statements included in this Report.

Recent Accounting Pronouncements

See Note 2 of the Notes to the Consolidated Financial Statements included in this Report for further discussion of recent accounting pronouncements, including the expected dates of adoption.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

We provide information, analytics and online marketplace services to commercial real estate and related business communities within the regions where we operate which primarily include, North America, Europe, Asia-Pacific and Latin America. The functional currency for a majority of our operations is the local currency, with the exception of certain international locations for which the functional currency is the British Pound.

Fluctuations in the British Pound, Canadian dollar and Euro may have an impact on our business, results of operations and financial position. For the years ended December 31, 2022 and December 31, 2021, revenues denominated in foreign currencies were approximately 4% and 4%, respectively, of total revenue. For the years ended December 31, 2022 and December 31, 2021, our revenues would have decreased by approximately $8 million and $7 million, respectively, if the U.S. dollar exchange rate used strengthened by 10%. For the years ended December 31, 2022 and December 31, 2021, our revenues would have increased by approximately $8 million and $7 million, respectively, if the U.S. dollar exchange rate used weakened by 10%. Fluctuations in the exchange rates of revenues denominated in any other foreign currencies would have had an immaterial impact on our consolidated results. In addition, we have assets and liabilities denominated in foreign currencies. We currently do not use financial instruments to hedge our exposure to exchange rate fluctuations with respect to our foreign subsidiaries. We may seek to enter into hedging transactions in the future to reduce our exposure to exchange rate fluctuations, but we may be unable to enter into hedging transactions successfully, on acceptable terms or at all. As of December 31, 2022, accumulated other comprehensive loss included a loss from foreign currency translation adjustments of approximately $29.1 million.

We do not believe we have material exposure to market risks associated with changes in interest rates related to cash equivalent securities held as of December 31, 2022. As of December 31, 2022, we had $5.0 billion of cash and cash equivalents. If there is an increase or decrease in interest rates, there will be a corresponding increase or decrease in the amount of interest earned on our cash and cash equivalents. We currently diversify our cash and cash equivalents holdings amongst multiple financial institutions.

We are subject to interest rate market risk in connection with our revolving credit facility. On July 1, 2020, we entered into the 2020 Credit Agreement, which provides for variable rate borrowings of up to $750 million. On July 1, 2020, we issued $1.0 billion aggregate principal amount of Senior Notes. Changes in interest rates would not have a material impact to our current interest and debt financing expense, as all of our borrowings except for our credit facility are fixed rate, and no amounts were outstanding under our credit facility as of December 31, 2022. See Note 11 of the Notes to the Consolidated Financial Statements included in this Report for additional information regarding our 2020 Credit Agreement.

We had approximately $2.6 billion of goodwill and intangible assets as of December 31, 2022. As of December 31, 2022, we believe our intangible assets will be recoverable; however, changes in the economy, the business in which we operate and our own relative performance could change the assumptions used to evaluate intangible asset recoverability. In the event that we determine that an asset has been impaired, we would recognize an impairment charge equal to the amount by which the carrying amount of the assets exceeds the fair value of the asset. We continue to monitor these assumptions and their effect on the estimated recoverability of our intangible assets.

Item 8. Financial Statements and Supplementary Data

Financial Statements meeting the requirements of Regulation S-X, including reports of independent registered public accounting firm Ernst & Young LLP, are set forth beginning at page F-1. Supplementary data is set forth in "Management's Discussion and Analysis of Financial Condition and Results of Operations" under the caption "Consolidated Results of Operations."

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

None.

Item 9A. Controls and Procedures

We maintain disclosure controls and procedures that are designed to ensure that information required to be disclosed in our reports filed or submitted under the Securities Exchange Act of 1934 is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow for timely decisions regarding required disclosure. In designing and evaluating the disclosure controls and procedures, management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and management is required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

As of December 31, 2022, we carried out an evaluation, under the supervision and with the participation of our management, including our Chief Executive Officer and our Chief Financial Officer, of the effectiveness of the design and operation of our disclosure controls and procedures as of the end of the fiscal year. Based on the foregoing, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective as of December 31, 2022 and were operating at a reasonable assurance level.

We continue to implement a financial system that is designed to improve the efficiency and effectiveness of our operational and financial accounting processes. This implementation is expected to be a multi-year project. Consistent with any process change that we implement, the design of the internal controls has and will continue to be evaluated for effectiveness as part of our overall assessment of the effectiveness of our disclosure controls and procedures. We expect that the implementation of this system will improve our internal control over financial reporting.

Other than the implementation of a new financial system noted above, there have been no changes in our internal control over financial reporting during the quarter ended December 31, 2022 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Management's Report on Internal Control over Financial Reporting

Management of CoStar Group is responsible for establishing and maintaining adequate internal control over financial reporting and for the assessment of the effectiveness of internal control over financial reporting. As defined by the SEC, internal control over financial reporting is a process designed by, or supervised by, the Company's principal executive and principal financial officers, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements in accordance with GAAP.

The Company's internal control over financial reporting is supported by written policies and procedures, that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the Company's assets; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures of the Company are being made only in accordance with authorizations of the Company's management and directors; and (3) 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. 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.

In connection with the preparation of the Company's annual financial statements, management of the Company has undertaken an assessment of the effectiveness of the Company's internal control over financial reporting as of December 31, 2022 based on criteria established in Internal Control – Integrated Framework (2013 framework) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Management's assessment included an evaluation of the design of the Company's internal control over financial reporting and testing of the operational effectiveness of the Company's internal control over financial reporting.

Based on this assessment, management has concluded that the Company's internal control over financial reporting was effective as of December 31, 2022.

Ernst & Young LLP, the independent registered public accounting firm that audited the Company's financial statements included in this report, has issued an attestation report on the effectiveness of internal control over financial reporting, a copy of which is included in this Report.

Item 9B. Other Information.

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections.

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

CoStar Group has adopted a Code of Conduct for its directors. In addition, CoStar Group has adopted a separate Code of Business Conduct and Ethics for its officers and employees, including its principal executive, financial and accounting officers, or persons performing similar functions. Copies of each of these codes may be found in the "Investors" section of the Company's website at https://investors.costargroup.com/leadership. We intend to disclose future amendments to certain provisions of our Codes, or waivers of such provisions granted to executive officers and directors, as required by the SEC rules on the Company's website within four business days following the date of such amendment or waiver.

The remaining information required by this Item is incorporated by reference to our Proxy Statement for our 2023 annual meeting of stockholders under the captions "Nominees for the Board of Directors," "Nominees' Business Experience, Qualifications and Directorships," "Executive Officers," "Board Meetings and Committees," and, if applicable, "Delinquent Section 16(a) Reports."

Item 11. Executive Compensation

The information required by this Item is incorporated by reference to our Proxy Statement for our 2023 annual meeting of stockholders under the captions "Compensation Discussion and Analysis," "Executive Compensation Tables and Discussion," "Narratives to Summary Compensation Table and Grants of Plan-Based Awards Table," "Director Compensation," "Compensation Committee Interlocks and Insider Participation," and "Compensation Committee Report."

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 our 2023 annual meeting of stockholders under the captions "Equity Compensation Plan Information" and "Stock Ownership Information."

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 our 2023 annual meeting of stockholders under the captions "Certain Relationships and Related Transactions" and "Corporate Governance Matters."

Item 14. Principal Accountant Fees and Services

The information required by this Item is incorporated by reference to our Proxy Statement for our 2023 annual meeting of stockholders under the caption "Ratification of the Appointment of Independent Registered Public Accounting Firm."

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a)(1) The following financial statements are filed as a part of this Report: CoStar Group, Inc. Consolidated Financial Statements.

(a)(2) Financial statement schedules: Additional financial statement schedules are omitted because they are not applicable or not required or because the required information is incorporated herein by reference or included in the financial statements or related notes included elsewhere in this report.

(a)(3) The documents required to be filed as exhibits to this Report under Item 601 of Regulation S-K are listed as follows:

Exhibits

Exhibit No.	Description
3.1	Fourth Amended and Restated Certificate of Incorporation of CoStar Group, Inc. (Incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed with the SEC on June 7, 2021).
3.2	Fourth Amended and Restated By-Laws of CoStar Group, Inc. (Incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed with the SEC on May 9, 2022).
4.1	Specimen Common Stock Certificate (Incorporated by reference to Exhibit 4.1 to the Registration Statement on Form S-4 of the Registrant (Reg. No. 333-174214) filed with the SEC on June 3, 2011).
4.2	Description of the Registrant's Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934 (Incorporated by reference to Exhibit 4.2 to the Registrant's Annual Report on Form 10-K filed with the SEC on February 23, 2022).
4.3	Indenture, dated as of July 1, 2020, by and among CoStar Group, Inc., as issuer, the guarantors named therein and Wilmington Trust, National Association, as trustee, relating to the 2.800% Senior Notes due 2030, including the form of 2.800% Senior Notes due 2030 (Incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K filed with the SEC on July 1, 2020).
*10.1	CoStar Group, Inc. 2016 Stock Incentive Plan (Incorporated by reference to Exhibit 4.4 to the Registration Statement on Form S-8 of the Registrant (Reg. No. 333-212278) filed with the SEC on June 28, 2016).
*10.2	First Amendment to the CoStar Group, Inc. 2016 Stock Incentive Plan (Incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q filed April 25, 2018).
*10.3	CoStar Group, Inc. 2007 Stock Incentive Plan, as amended (Incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed June 8, 2012).
*10.4	CoStar Group, Inc. 2007 Stock Incentive Plan French Sub-Plan (Incorporated by reference to Exhibit 10.3 to the Registrant's Report on Form 10-K filed February 29, 2008).
*10.5	Form of CoStar Group, Inc. 2016 Plan Restricted Stock Grant Agreement between the Registrant and certain of its officers, directors and employees (Incorporated by reference to Exhibit 10.3 to the Registrant's Quarterly Report on Form 10-Q filed July 28, 2016).
*10.6	Form of CoStar Group, Inc. 2016 Plan Restricted Stock Grant Agreement for Service Awards between the Registrant and certain of its officers and employees (Incorporated by reference to Exhibit 10.4 to the Registrant's Quarterly Report on Form 10-Q filed July 28, 2016).
*10.7	Form of CoStar Group, Inc. 2016 Plan Restricted Stock Unit Grant Agreement between the Registrant and certain of its officers and employees (Incorporated by reference to Exhibit 10.5 to the Registrant's Quarterly Report on Form 10-Q filed July 28, 2016).
*10.8	Form of CoStar Group, Inc. 2016 Plan Incentive Stock Option Grant Agreement between the Registrant and certain of its officers and employees (Incorporated by reference to Exhibit 10.6 to the Registrant's Quarterly Report on Form 10-Q filed July 28, 2016).
*10.9	Form of CoStar Group, Inc. 2016 Plan Incentive Stock Option Grant Agreement between the Registrant and Andrew C. Florance (Incorporated by reference to Exhibit 10.7 to the Registrant's Quarterly Report on Form 10-Q filed July 28, 2016).
*10.10	Form of CoStar Group, Inc. 2016 Plan Nonqualified Stock Option Grant Agreement between the Registrant and certain of its officers, directors and employees (Incorporated by reference to Exhibit 10.8 to the Registrant's Quarterly Report on Form 10-Q filed July 28, 2016).

Exhibit No.	Description
*10.11	Form of CoStar Group, Inc. 2016 Plan Nonqualified Stock Option Grant Agreement between the Registrant and Andrew C. Florance (Incorporated by reference to Exhibit 10.9 to the Registrant's Quarterly Report on Form 10-Q filed July 28, 2016).
*10.12	Form of 2007 Plan Restricted Stock Grant Agreement between the Registrant and certain of its officers, directors and employees (Incorporated by reference to Exhibit 99.1 to the Registrant's Report on Form 8-K filed June 22, 2007).
*10.13	Form of 2007 Plan Restricted Stock Unit Agreement between the Registrant and certain of its officers and employees (Incorporated by reference to Exhibit 10.8 to the Registrant's Report on Form 10-K filed February 20, 2014).
*10.14	Form of 2007 Plan Incentive Stock Option Grant Agreement between the Registrant and certain of its officers and employees (Incorporated by reference to Exhibit 10.8 to the Registrant's Report on Form 10-K filed February 24, 2009).
*10.15	Form of 2007 Plan Incentive Stock Option Grant Agreement between the Registrant and Andrew C. Florance (Incorporated by reference to Exhibit 10.9 to the Registrant's Report on Form 10-K filed February 24, 2009).
*10.16	Form of 2007 Plan Nonqualified Stock Option Grant Agreement between the Registrant and certain of its officers and employees (Incorporated by reference to Exhibit 10.10 to the Registrant's Report on Form 10-K filed February 24, 2009).
*10.17	Form of 2007 Plan Nonqualified Stock Option Grant Agreement between the Registrant and certain of its directors (Incorporated by reference to Exhibit 10.11 to the Registrant's Report on Form 10-K filed February 24, 2009).
*10.18	Form of 2007 Plan Nonqualified Stock Option Grant Agreement between the Registrant and Andrew C. Florance (Incorporated by reference to Exhibit 10.12 to the Registrant's Report on Form 10-K filed February 24, 2009).
*10.19	Form of 2007 Plan French Sub-Plan Restricted Stock Agreement between the Registrant and certain of its employees (Incorporated by reference to Exhibit 10.10 to the Registrant's Report on Form 10-K filed February 29, 2008).
*10.20	CoStar Group, Inc. 2016 Cash Incentive Plan (Incorporated by reference to Exhibit 10.2 to the Registrant's Quarterly Report on Form 10-Q filed July 28, 2016).
*10.21	Second Amended and Restated Employee Stock Purchase Plan (Incorporated by reference to Exhibit 4.4 to the Registrant's Registration Statement on Form S-8 filed with the SEC on July 28, 2021).
*10.22	CoStar Group, Inc. Management Stock Purchase Plan (Incorporated by reference to Exhibit 10.21 to the Registrant's Report on Form 10-K filed February 23, 2018).
*10.23	Summary of Non-Employee Director Compensation (Incorporated by reference to Exhibit 10.1 to the Registrant's Report on Form 10-Q filed on October 24, 2013).
*10.24	Employment Agreement for Andrew C. Florance (Incorporated by reference to Exhibit 10.2 to Amendment No. 1 to the Registration Statement on Form S-1 of the Registrant (Reg. No. 333-47953) filed with the SEC on April 27, 1998).
*10.25	First Amendment to Andrew C. Florance Employment Agreement, effective January 1, 2009 (Incorporated by reference to Exhibit 10.16 to the Registrant's Report on Form 10-K filed February 24, 2009).
10.26	Form of Indemnification Agreement between the Registrant and each of its officers and directors (Incorporated by reference to Exhibit 10.1 to the Registrant's Report on Form 10-Q filed on May 7, 2004).
10.27	Deed of Office Lease by and between GLL L-Street 1331, LLC and CoStar Realty Information, Inc., dated February 18, 2011, and made effective as of June 1, 2010 (Incorporated by reference to Exhibit 10.1 to the Registrant's Report on form 10-Q filed on April 29, 2011).
10.28	Second Amended and Restated Credit Agreement, dated as of July 1, 2020, by and among CoStar Group, Inc., as borrower, CoStar Realty Information, Inc., as co-borrower, the lenders party thereto and Bank of America, N.A., as administrative agent (Incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed with the SEC on July 1, 2020)
21.1	Subsidiaries of the Registrant (filed herewith).
23.1	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm (filed herewith).
31.1	Certification of Principal Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith).
31.2	Certification of Principal Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith).
32.1	Certification of Principal Executive Officer pursuant to 18 U.S.C. Sec. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (furnished herewith).

Exhibit No.	Description
32.2	Certification of Principal Financial Officer pursuant to 18 U.S.C. Sec. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (furnished herewith).
101.INS	The following financial statements from the Company’s Annual Report on Form 10-K for the year ended December 31, 2022, formatted in Inline XBRL: (i) Consolidated Statements of Operations; (ii) Consolidated Statements of Comprehensive Income; (iii) Consolidated Balance Sheets; (iv) Consolidated Statements of Cash Flows; and (v) Notes to Consolidated Financial Statements, tagged as blocks of text and including detailed tags.
101.SCH	Inline XBRL Taxonomy Extension Schema Document.
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document.
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
104	The cover page from the Registrant's Annual Report on Form 10-K for the year ended December 31, 2022, formatted in Inline XBRL (included as Exhibit 101).

* Management Contract or Compensatory Plan or Arrangement.

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.

COSTAR GROUP, INC.

By: /s/ Andrew C. Florance

February 22, 2023

Andrew C. Florance
President and Chief Executive Officer

KNOW ALL PERSONS BY THESE PRESENTS, that each individual whose signature appears below constitutes and appoints Andrew C. Florance and Scott T. Wheeler, and each of them individually, as their true and lawful attorneys-in-fact and agents, with full power of substitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments to this report, and to file the same, with all exhibits thereto and to all documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he might or could do in person, herein by ratifying and confirming all that said attorneys-in-fact and agents or any of them, or his or their substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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

Signature	Capacity	Date
/s/ Michael R. Klein Michael R. Klein	Chairman of the Board	February 22, 2023
/s/ Andrew C. Florance Andrew C. Florance	Chief Executive Officer and President and a Director (Principal Executive Officer)	February 22, 2023
/s/ Scott T. Wheeler Scott T. Wheeler	Chief Financial Officer (Principal Financial and Accounting Officer)	February 22, 2023
/s/ Michael J. Glosserman Michael J. Glosserman	Director	February 22, 2023
/s/ John W. Hill John W. Hill	Director	February 22, 2023
/s/ Laura Cox Kaplan Laura Cox Kaplan	Director	February 22, 2023
/s/ Christopher J. Nassetta Christopher J. Nassetta	Director	February 22, 2023
/s/ Louise S. Sams Louise S. Sams	Director	February 22, 2023
/s/ Robert W. Musslewhite Robert W. Musslewhite	Director	February 22, 2023

COSTAR GROUP, INC.

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Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders of CoStar Group, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of CoStar Group, Inc. (the Company) as of December 31, 2022 and 2021, the related consolidated statements of operations, comprehensive income, changes in stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2022 and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at 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 U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated February 22, 2023 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the 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 audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the 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 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 financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of the critical audit matter 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.

Highly Automated Revenue Systems related to Subscription Revenue

Description of the Matter

As described in Note 2 to the consolidated financial statements, the Company derives revenues primarily by (i) providing access to its proprietary database of commercial real estate information and (ii) providing online marketplaces for professional property management companies, property owners, real estate agents and brokers and landlords, in each case, typically through a fixed fee for its subscription-based services. Revenues from subscription-based contracts are approximately 93% of total revenues for the current year and are recognized on a straight-line basis over the term of the agreement. The Company's revenue recognition process involves several applications responsible for the initiation, processing, and recording of transactions. These applications interface with the Company's enterprise resource planning system through automated and manual journal entries to accurately reflect revenue.

The process to calculate, aggregate, and record revenue relies on multiple internally developed and external tools and systems and involves interfacing significant volumes of data across the systems. Auditing the Company's accounting for revenue from subscription-based contracts was challenging and complex due to the high volume of individually-low-monetary-value transactions, dependency on the effective design and operation of multiple applications, some of which are specifically designed for the Company's business, and the use of multiple data sources in the revenue recognition process. Given the complexity of the information technology (IT) environment, the required involvement of professionals with expertise in IT to identify, test, and evaluate the revenue data flows, systems, and automated controls, we considered the audit of the Company's subscription revenue-generating transactions to be a critical audit matter.

How We Addressed the Matter in Our Audit

We performed procedures related to the Company's internal controls that included, among others, obtaining an understanding, evaluating the design, and testing the operating effectiveness of internal controls over the Company's accounting for subscription revenue. We tested the controls over the initiation and billing of new and recurring subscriptions, the provisioning of customers, and the Company's cash to billings reconciliation process. We tested the controls related to the key application interfaces between the provisioning, billing, and accounting systems and tested IT general controls related to access to the relevant applications and data, and changes made to the relevant systems, configurations and interfaces.

We performed substantive audit procedures that included, among others, testing the Company's accounting for revenue from contracts with customers, by testing, on a sample basis, the completeness and accuracy of the underlying data within the Company's billing system. We performed data analytics by extracting data from the general ledger to evaluate the completeness and accuracy of recorded revenue and deferred revenue amounts, tracing a sample of sales transactions to source data, and testing a sample of cash to billings reconciliations.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1994.

Tysons, Virginia
February 22, 2023

Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders of CoStar Group, Inc.

Opinion on Internal Control over Financial Reporting

We have audited CoStar Group, Inc.'s internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, CoStar Group, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of CoStar Group, Inc. as of December 31, 2022 and 2021, the related consolidated statements of operations, comprehensive income, changes in stockholders' equity and cash flows for each of the three years in the period ended December 31, 2022 and the related notes of CoStar Group, Inc. and our report dated February 22, 2023 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the 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 audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

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 (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) 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 (3) 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.

/s/ Ernst & Young LLP

Tysons, Virginia
February 22, 2023

COSTAR GROUP, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except per share data)

	Year Ended December 31,		
	2022	**2021**	**2020**
Revenues	$ 2,182,399	$ 1,944,135	$ 1,659,019
Cost of revenues	414,008	357,241	308,968
Gross profit	1,768,391	1,586,894	1,350,051
Operating expenses:			
Selling and marketing (excluding customer base amortization)	684,222	622,007	535,778
Software development	220,923	201,022	162,916
General and administrative	338,737	256,711	299,698
Customer base amortization	73,560	74,817	62,457
	1,317,442	1,154,557	1,060,849
Income from operations	450,949	432,337	289,202
Interest income (expense), net	32,125	(31,621)	(17,395)
Other income (expense), net	3,383	3,252	(827)
Income before income taxes	486,457	403,968	270,980
Income tax expense	117,004	111,404	43,852
Net income	$ 369,453	$ 292,564	$ 227,128
Net income per share — basic[(1)]	$ 0.93	$ 0.75	$ 0.60
Net income per share — diluted[(1)]	$ 0.93	$ 0.74	$ 0.59
Weighted-average outstanding shares — basic[(1)]	396,284	392,210	380,726
Weighted-average outstanding shares — diluted[(1)]	397,752	394,160	383,266

[(1)]Certain prior period amounts have been retroactively adjusted to reflect the ten-for-one stock split effected in the form of a stock dividend in June 2021.

See accompanying notes.

COSTAR GROUP, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(in thousands)

	Year Ended December 31,		
	2022	**2021**	**2020**
Net income	$ 369,453	$ 292,564	$ 227,128
Other comprehensive (loss) income, net of tax			
Foreign currency translation adjustment	(23,317)	(4,869)	6,966
Unrealized gain on investments	—	—	189
Reclassification adjustment for realized loss on investments included in net income	—	—	541
Total other comprehensive (loss) income, net of tax	(23,317)	(4,869)	7,696
Total comprehensive income	$ 346,136	$ 287,695	$ 234,824

See accompanying notes.

COSTAR GROUP, INC.
CONSOLIDATED BALANCE SHEETS
(in thousands, except per share data)

	December 31,	
	2022	**2021**
ASSETS		
Current assets:		
Cash and cash equivalents	$ 4,967,970	$ 3,827,126
Accounts receivable	166,140	138,191
Less: Allowance for credit losses	(12,195)	(13,374)
Accounts receivable, net	153,945	124,817
Prepaid expenses and other current assets	63,952	36,182
Total current assets	5,185,867	3,988,125
Deferred income taxes, net	9,722	5,034
Lease right-of-use assets	80,392	100,680
Property and equipment, net	321,250	271,431
Goodwill	2,314,759	2,321,015
Intangible assets, net	329,306	435,662
Deferred commission costs, net	142,482	101,879
Deposits and other assets	16,687	21,762
Income tax receivable	2,005	11,283
Total assets	$ 8,402,470	$ 7,256,871
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 28,460	$ 22,244
Accrued wages and commissions	104,988	81,794
Accrued expenses	89,113	81,676
Income taxes payable	10,438	31,236
Lease liabilities	36,049	26,268
Deferred revenue	103,567	95,471
Total current liabilities	372,615	338,689
Long-term debt, net	989,210	987,944
Deferred income taxes, net	76,202	98,656
Income taxes payable	14,001	12,496
Lease and other long-term liabilities	80,321	107,414
Total liabilities	1,532,349	1,545,199
Stockholders' equity:		
Preferred stock, $0.01 par value; 2 million shares authorized; zero outstanding	—	—
Common stock, $0.01 par value; 1.2 billion shares authorized; 406,671 and 394,936 issued and outstanding as of December 31, 2022 and 2021, respectively	4,066	3,946
Additional paid-in capital	5,065,511	4,253,318
Accumulated other comprehensive loss	(29,075)	(5,758)
Retained earnings	1,829,619	1,460,166
Total stockholders' equity	6,870,121	5,711,672
Total liabilities and stockholders' equity	$ 8,402,470	$ 7,256,871

COSTAR GROUP, INC.
CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY
(in thousands)

	Common Stock[1]		Additional Paid-In Capital[1]	Accumulated Other Comprehensive Loss	Retained Earnings	Total Stockholders' Equity
	Shares	Amount				
Balance at December 31, 2019	366,806	$ 3,668	$ 2,470,036	$ (8,585)	$ 940,474	$ 3,405,593
Net income	—	—	—	—	227,128	227,128
Other comprehensive income	—	—	—	7,696	—	7,696
Exercise of stock options	953	10	21,861	—	—	21,871
Restricted stock issued	1,012	10	(10)	—	—	—
Restricted stock grants surrendered	(952)	(9)	(38,857)	—	—	(38,866)
Stock-based compensation expense	—	—	52,624	—	—	52,624
Employee stock purchase plan	130	1	9,342	—	—	9,343
Stock issued for equity offerings, net of transaction costs	26,336	263	1,689,707	—	—	1,689,970
Balance at December 31, 2020	394,285	3,943	4,204,703	(889)	1,167,602	5,375,359
Net income	—	—	—	—	292,564	292,564
Other comprehensive loss	—	—	—	(4,869)	—	(4,869)
Exercise of stock options	206	2	6,339	—	—	6,341
Restricted stock issued	862	8	(7)	—	—	1
Restricted stock grants surrendered	(569)	(7)	(33,307)	—	—	(33,314)
Stock-based compensation expense	—	—	62,585	—	—	62,585
Employee stock purchase plan	152	—	13,005	—	—	13,005
Balance at December 31, 2021	394,936	$ 3,946	$ 4,253,318	$ (5,758)	$ 1,460,166	$ 5,711,672
Net income	—	—	—	—	369,453	369,453
Other comprehensive loss	—	—	—	(23,317)	—	(23,317)
Restricted stock issued	1,512	16	(16)	—	—	—
Restricted stock grants surrendered	(657)	(7)	(23,101)	—	—	(23,108)
Stock-based compensation expense	—	—	74,677	—	—	74,677
Employee stock purchase plan	224	4	15,040	—	—	15,044
Stock issued for equity offerings, net of transaction costs	10,656	107	745,593	—	—	745,700
Balance at December 31, 2022	406,671	$ 4,066	$ 5,065,511	$ (29,075)	$ 1,829,619	$ 6,870,121

[1] Certain prior period amounts have been retroactively adjusted to reflect the ten-for-one stock split effected in the form of a stock dividend in June 2021.

See accompanying notes.

COSTAR GROUP, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	Year Ended December 31,		
	2022	**2021**	**2020**
Operating activities:			
Net income	$ 369,453	$ 292,564	$ 227,128
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	137,885	139,558	116,944
Amortization of deferred commissions costs	76,082	63,391	60,516
Amortization of Senior Notes discount and issuance costs	2,365	2,327	1,658
Non-cash lease expense	38,489	28,485	26,326
Stock-based compensation expense	75,207	63,709	53,450
Deferred income taxes, net	(31,203)	24,165	(11,530)
Credit loss expense	18,309	10,928	25,212
Other operating activities, net	(2,439)	(654)	288
Changes in operating assets and liabilities, net of acquisitions:			
Accounts receivable	(46,403)	(29,630)	(36,118)
Prepaid expenses and other current assets	(17,910)	(14,873)	1,936
Deferred commissions	(116,796)	(72,038)	(64,355)
Accounts payable and other liabilities	23,234	(30,051)	100,846
Lease liabilities	(37,396)	(30,904)	(30,497)
Income taxes payable	(19,259)	5,860	10,352
Deferred revenue	6,785	17,396	2,188
Other assets	2,217	(502)	1,762
Net cash provided by operating activities	478,620	469,731	486,106
Investing activities:			
Proceeds from sale and settlement of investments	864	—	10,259
Proceeds from sale of property and equipment and other assets	30,097	612	—
Purchase of Richmond assets	(35,169)	(123,764)	—
Purchases of property and equipment and other assets	(58,574)	(65,220)	(48,347)
Cash paid for acquisitions, net of cash acquired	(6,273)	(192,971)	(426,075)
Net cash used in investing activities	(69,055)	(381,343)	(464,163)
Financing activities:			
Proceeds from long-term debt	—	—	1,744,210
Payments of long-term debt	(2,155)	—	(745,000)
Payments of debt issuance costs	—	—	(16,647)
Repurchase of restricted stock to satisfy tax withholding obligations	(23,108)	(33,314)	(38,867)
Proceeds from equity offering, net of transaction costs	745,700	—	1,689,971
Proceeds from exercise of stock options and employee stock purchase plan	13,540	18,046	30,280
Other financing activities	—	(411)	(1,650)
Net cash provided by (used in) financing activities	733,977	(15,679)	2,662,297
Effect of foreign currency exchange rates on cash and cash equivalents	(2,698)	(1,495)	941
Net increase in cash and cash equivalents	1,140,844	71,214	2,685,181
Cash and cash equivalents at beginning of year	3,827,126	3,755,912	1,070,731
Cash and cash equivalents at end of year	$ 4,967,970	$ 3,827,126	$ 3,755,912
Supplemental cash flow disclosures:			
Interest paid	$ 29,947	$ 31,510	$ 5,948
Income taxes paid	$ 169,176	$ 82,117	$ 45,783
Supplemental non-cash investing and financing activities:			
Consideration owed for acquisitions	$ —	$ 60	$ 793
Accrued capital expenditures and non-cash landlord incentives	$ 14,739	$ 2,117	$ 2,364

See accompanying notes.

1. ORGANIZATION

CoStar Group (the "Company") provides information, analytics, online marketplaces and auction services to the commercial real estate and related business community through its comprehensive, proprietary database of commercial real estate information and related tools. The Company provides online marketplaces for commercial real estate, apartment rentals, residential real estate, land for sale and businesses for sale, and its services are typically distributed to its clients under subscription-based agreements that typically renew automatically, a majority of which have a term of at least one year. The Company operates within two operating segments, North America, which includes the U.S. and Canada, and International, which primarily includes Europe, Asia-Pacific and Latin America.

The Company acquired Homes.com, BureauxLocaux and Business Immo in May 2021, October 2021 and April 2022, respectively.

See Note 5 for further discussion of these acquisitions.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation

The consolidated financial statements include the accounts of the Company and its wholly owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation. Accounting policies are consistent for each operating segment.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. On an ongoing basis, the Company evaluates its estimates and assumptions, including those related to revenue recognition, allowance for credit losses, the useful lives and recoverability of long-lived and intangible assets, goodwill, income taxes, accounting for business combinations, stock-based compensation, estimating the Company's incremental borrowing rate for its leases, and contingencies, among others. The Company bases these estimates on historical and anticipated results, trends and various other assumptions that it believes are reasonable, including assumptions as to future events. These estimates form the basis for making judgments about the carrying values of assets and liabilities and recorded revenues and expenses. Actual results could differ from these estimates.

Revenue Recognition

The Company derives revenues primarily by (i) providing access to its proprietary database of commercial real estate information and (ii) providing online marketplaces for professional property management companies, property owners, real estate agents and brokers and landlords, in each case, typically through a fixed monthly fee for its subscription-based services. Other subscription-based services include (i) real estate and lease management solutions to commercial customers, real estate investors and lenders, (ii) access to applications to manage workflow and advertising and marketing services for residential real estate agents through our acquisitions of Homes.com and Homesnap, (iii) benchmarking and analytics for the hospitality industry and (iv) market research, portfolio and debt analysis, management and reporting capabilities.

Subscription contract rates are generally based on the number of sites, number of users, organization size, the client's business focus, geography, the number of properties reported on or analyzed, the number and types of services to which a client subscribes, the number of properties a client advertises and the prominence and placement of a client's advertised properties in the search results. The Company's subscription-based license agreements typically renew automatically, and a majority have a term of at least one year. Revenue from our subscription-based contracts was approximately 93%, 93% and 95% of total revenue for the years ended December 31, 2022, 2021 and 2020, respectively.

The Company also derives revenues from transaction-based services including: (i) an online auction platform for commercial real estate through Ten-X, (ii) providing online tenant applications, including background and credit checks, and rental payment processing and (iii) ancillary products and services that sold on an ad hoc basis.

The Company analyzes contracts to determine the appropriate revenue recognition using the following steps: (i) identification of contracts with customers, (ii) identification of distinct performance obligations in the contract, (iii) determination of contract transaction price, (iv) allocation of contract transaction price to the performance obligations and (v) determination of revenue recognition based on timing of satisfaction of the performance obligations.

The Company recognizes revenues upon the satisfaction of its performance obligation(s) (upon transfer of control of promised services to its customers) in an amount that reflects the consideration to which it expects to be entitled to in exchange for those services. Revenues from subscription-based services are recognized on a straight-line basis over the term of the agreement. Revenues from transaction-based services are recognized when the promised product or services are delivered, which, in the case of Ten-X auctions, is at the time of a successful closing for the sale of the property.

In limited circumstances, the Company's contracts with customers include promises to transfer multiple services, such as contracts for its subscription-based services and professional services. For these contracts, the Company accounts for individual performance obligations separately if they are distinct, which involves the determination of the standalone selling price for each distinct performance obligation.

Deferred revenue results from amounts billed in advance to customers or cash received from customers in advance of the Company's fulfillment of its performance obligation(s) and is recognized as those obligations are satisfied.

Contract assets represent a conditional right to consideration for satisfied performance obligations that become a receivable when the conditions are satisfied. Contract assets are generated when contractual billing schedules differ from revenue recognition timing.

Certain sales commissions are considered incremental and recoverable costs of obtaining a contract with a customer. Sales commissions incurred for obtaining new contracts are deferred and then amortized as selling and marketing expenses on a straight-line basis over a period of benefit that the Company has determined to be three years. The three-year amortization period was determined based on several factors, including the nature of the technology and proprietary data underlying the services being purchased, customer contract renewal rates and industry competition. Certain commission costs are not capitalized as they do not represent incremental costs of obtaining a contract.

See Note 3 for further discussion of the Company's revenue recognition.

Cost of Revenues

Cost of revenues principally consists of salaries, benefits, bonuses, stock-based compensation expenses and other indirect costs for the Company's researchers who collect and analyze the real estate data that is the basis for the Company's information, analytics and online marketplaces and for employees that support these products. Additionally, cost of revenues includes the cost of data from third-party data sources and costs related to advertising purchased on behalf of customers, credit card and other transaction fees relating to processing customer transactions, which are expensed as incurred, and the amortization of acquired trade names, technology and certain other intangible assets.

Foreign Currency Translation

The Company’s reporting currency is the U.S. dollar. The functional currency for the majority of its operations is the local currency, with the exception of certain international locations for which the functional currency is the British Pound. Assets and liabilities denominated in a foreign currency are translated into U.S. dollars using the exchange rates in effect as of the balance sheet date. Gains and losses resulting from translation are included in accumulated other comprehensive loss. Currency gains and losses on the translation of intercompany loans made to foreign subsidiaries that are of a long-term investment nature are also included in accumulated other comprehensive loss. Gains and losses resulting from transactions denominated in a currency other than the functional currency of the entity are included in other income (expense), net in the consolidated statements of operations using the average exchange rates in effect during the period. The Company recognized net foreign currency gains of $1.4 million and $0.3 million, and losses of $0.2 million for the years ended December 31, 2022, 2021 and 2020, respectively, which are included in other income (expense), net on the consolidated statements of operations.

Accumulated Other Comprehensive Loss

The components of accumulated other comprehensive loss, net of tax, were as follows (in thousands):

	As of December 31,	
	2022	2021
Foreign currency translation adjustment	$ (29,075)	$ (5,758)
Total accumulated other comprehensive loss	$ (29,075)	$ (5,758)

During the year ended December 31, 2020, the Company sold its long-term variable debt instruments with an auction reset feature, referred to ARS, and reclassified out of accumulated other comprehensive loss a realized loss of $0.5 million to earnings that is included in other income (expense), net in the consolidated statements of operations. There were no amounts reclassified out of accumulated other comprehensive loss to the consolidated statements of operations for the years ended December 31, 2022 and December 31, 2021.

Advertising Costs

The Company expenses advertising costs as incurred. Advertising costs include digital marketing, television, radio, print and other media advertising. Advertising costs were $305.7 million, $312.0 million and $270.5 million for the years ended December 31, 2022, 2021 and 2020, respectively.

Income Taxes

Deferred income taxes result from temporary differences between the tax basis of assets and liabilities and the basis reported in the Company’s consolidated financial statements. Deferred tax liabilities and assets are determined based on the difference between the financial statement and the tax basis of assets and liabilities using enacted rates in effect during the year in which the Company expects differences to reverse. Valuation allowances are provided against assets, including net operating losses, if the Company determines it is more likely than not that some portion or all of an asset may not be realized. Interest and penalties related to income tax matters are recognized in income tax expense.

The Company has elected to record the GILTI under the current-period cost method.

See Note 12 for further discussion of income taxes.

Net Income Per Share

Net income per share is computed by dividing net income by the weighted-average number of common shares outstanding during the period on a basic and diluted basis. The Company's potentially dilutive securities include outstanding stock options, unvested stock-based awards, which include restricted stock awards that vest over a specific service period, restricted stock awards with a performance and market condition, restricted stock units and Matching RSUs awarded under the MSPP. Shares underlying unvested restricted stock awards that vest based on a performance and market condition that have not been achieved as of the end of the period are not included in the computation of basic or diluted earnings per share. Diluted net income per share considers the impact of potentially dilutive securities except when the inclusion of the potentially dilutive securities would have an anti-dilutive effect.

See Note 16 for further discussion of the Company's calculation of net income per share.

Stock-Based Compensation

Equity instruments issued in exchange for services performed by officers, employees and directors of the Company are accounted for using a fair-value based method and the fair value of such equity instruments is recognized as expense in the consolidated statements of operations.

For stock-based awards that vest over a specific service period, compensation expense is measured based on the fair value of the awards at the grant date and is recognized on a straight-line basis over the service period of the awards, net of an estimated forfeiture rate. For equity instruments that vest based on achievement of both a performance and market condition,

stock-based compensation expense is recognized over the service period of the awards based on the expected achievement of the related performance conditions at the end of each reporting period. If the Company's initial estimates of the achievement of the performance conditions change, the related stock-based compensation expense may fluctuate from period to period based on those estimates. If the performance conditions are not met, no stock-based compensation expense will be recognized and any previously recognized stock-based compensation expense will be reversed. For awards with both a performance and a market condition, the Company estimates the fair value of each equity instrument granted on the date of grant using a Monte-Carlo simulation model. This pricing model uses multiple simulations to evaluate the probability of achieving the market condition to calculate the fair value of the awards which includes the recent market price and volatility of the Company's shares. When determining the grant date fair value of all stock-based awards, the Company considers whether it is in possession of any material, non-public information that upon its release would have a material affect on its share price, and if so, whether the observable share price or expected volatility assumptions used in determining the fair value of the awards should be adjusted.

Stock-based compensation expense for stock options, restricted stock awards and restricted stock units issued under equity incentive plans, stock purchases under the ESPP, DSUs and Matching RSUs awarded under the MSPP included in the Company’s consolidated statements of operations were as follows (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Cost of revenues	$ 12,579	$ 11,165	$ 10,879
Selling and marketing (excluding customer base amortization)	7,797	6,314	5,194
Software development	12,987	12,544	10,325
General and administrative	41,844	33,686	27,706
Total stock-based compensation expense[(1)]	$ 75,207	$ 63,709	$ 54,104

[(1)] Stock-based compensation expense for the year ended December 31, 2020 includes $0.7 million of expense related to the cash settlement of stock options in connection with the acquisition of Ten-X.

Cash and Cash Equivalents

The Company considers all highly liquid investments purchased with an original maturity of three months or less to be cash equivalents. Cash and cash equivalents were $5.0 billion and $3.8 billion as of December 31, 2022 and 2021, respectively. The Company had no restricted cash as of December 31, 2022 and 2021.

Concentration of Credit Risk and Financial Instruments

The Company’s customer base creates a lack of dependence on any individual customer that mitigates the risk of nonpayment of the Company’s accounts receivable. No single customer accounted for more than 5% of the Company’s revenues for each of the years ended December 31, 2022, 2021 and 2020. The carrying amount of the accounts receivable approximates the net realizable value.

The Company holds cash at major financial institutions that often exceed Federal Deposit Insurance Corporation insured limits. The Company manages its credit risk associated with cash concentrations by diversifying cash holdings across AAA rated Government and Treasury Money Market Funds and multiple high quality financial institutions, and by periodically evaluating the credit quality of the primary financial institutions holding such deposits. The carrying value of cash approximates fair value. Historically, the Company has not experienced any losses due to such cash concentrations.

Allowance for Credit Losses

The Company maintains an allowance for credit losses to cover its current expected credit losses on its trade receivables and contract assets arising from the failure of customers to make contractual payments. The Company estimates credit losses expected over the life of its trade receivables and contract assets based on historical information combined with current conditions that may affect a customer's ability to pay and reasonable and supportable forecasts. While the Company uses various credit quality metrics, it primarily monitors collectability by reviewing the duration of collection pursuits on its delinquent trade receivables and historical write-off trends. Based on the Company's experience, the customer's delinquency status, which is analyzed periodically, is the strongest indicator of the credit quality of the underlying trade receivables. The Company's policy is to write-off trade receivables when they are deemed uncollectible. A majority of the Company's trade receivables are less than 365 days outstanding.

Under the CECL impairment model, the Company develops and documents its allowance for credit losses on its trade receivables based on five portfolio segments. The determination of portfolio segments is based primarily on the qualitative consideration of the nature of the Company's business operations and the characteristics of the underlying trade receivables, as follows:

- *CoStar Portfolio Segment* - The CoStar portfolio segment consists of two classes of trade receivables based on geographical location: North America and International.
- *Information Services Portfolio Segment* - The Information Services portfolio segment consists of four classes of trade receivables: CoStar Real Estate Manager; Information Services, North America; STR, North America; and STR, International.
- *Multifamily Portfolio Segment* - The Multifamily portfolio segment consists of one class of trade receivables.
- *LoopNet Portfolio Segment* - The LoopNet portfolio segment consists of one class of trade receivables.
- *Other Marketplaces Portfolio Segment* - The Other Marketplaces portfolio segment consists of two classes of trade receivables: Ten-X and other marketplaces.

The majority of Residential revenue is e-commerce based and does not result in accounts receivable. Residential accounts receivable and the related allowance for credit losses are not material.

See Note 4 for further discussion of the Company's accounting for allowance for credit losses.

Leases

The determination of whether an arrangement contains a lease and the classification of a lease, if applicable, is made at the commencement of the arrangement, at which time the Company also measures and recognizes an ROU asset, representing the Company's right to use the underlying asset, and a lease liability, representing the Company's obligation to make lease payments under the terms of the arrangement. For the purposes of recognizing ROU assets and lease liabilities associated with the Company's leases, the Company has elected the practical expedient to not recognize a ROU asset or lease liability for short-term leases, which are leases with a term of twelve months or less. The lease term is defined as the noncancelable portion of the lease term, plus any periods covered by an option to extend the lease if it is reasonably certain that the option will be exercised.

In determining the amount of lease payments used in measuring ROU assets and lease liabilities, the Company has elected the practical expedient not to separate non-lease components from lease components for all classes of underlying assets. Consideration deemed part of the lease payments used to measure ROU assets and lease liabilities generally includes fixed payments and variable payments based on either an index or a rate, offset by lease incentives. Upon commencement, the initial ROU asset also includes any lease prepayments. ROU assets and liabilities are recognized at the lease commencement date based on the present value of lease payments over the lease term. The rates implicit within the Company's leases are generally not determinable. Therefore, the Company's incremental borrowing rate is used to determine the present value of lease payments. The determination of the Company's incremental borrowing rate requires judgment and is determined at lease commencement and is subsequently reassessed upon a modification to the lease arrangement.

Lease costs related to the Company's operating leases are generally recognized as a single ratable lease cost over the lease term.

See Note 7 for further discussion of the Company's accounting for leases.

Property and Equipment, Net

Property and equipment are stated at cost, net of accumulated depreciation and amortization. All repairs and maintenance costs are expensed as incurred. Costs related to acquisition of additional aircraft components or the replacement of existing aircraft components are capitalized and depreciated over the estimated useful life of the aircraft or the added or replaced component, whichever is less. Depreciation and amortization are calculated on a straight-line basis over the following estimated useful lives of the assets:

Buildings	Twenty to thirty-nine years
Land	Indefinite
Aircrafts	Ten to twenty years
Furniture and office equipment	Five to ten years
Vehicles	Five years
Computer hardware and software	Three to five years
Leasehold improvements	Shorter of lease terms or useful life

Qualifying internal-use software costs incurred during the application development stage, which consist primarily of internal product development costs, outside services and purchased software license costs are capitalized and amortized over the estimated useful life of the asset. All other costs are expensed as incurred. In the fourth quarter of 2021, the Company began removing fully depreciated property and equipment from the cost and accumulated depreciation amounts disclosed.

In January 2021, the Company purchased an office building located in Richmond, Virginia, together with the land and assumed an existing lease for a purchase price of $131 million, inclusive of property taxes, title insurance and other transaction costs. The purchase of the Richmond building was accounted for as an asset acquisition, including an intangible asset for the assumed lease. The net impact from the lease arrangement is recorded in other income (expense), net on the consolidated statements of operations and was not material. The Company has broken ground on an expansion of its campus in Richmond, Virginia and acquired a small office building near the campus to facilitate employee staging while the expansion is being constructed. The capitalized spending associated with these efforts is recorded in the purchase of Richmond assets line of the consolidated statements of cash flows.

Long-Lived Assets, Intangible Assets and Goodwill

Long-lived assets, such as property and equipment, and purchased intangibles subject to amortization, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to the estimated undiscounted future cash flows expected to be generated by the asset or asset group. If the carrying amount of an asset exceeds its estimated undiscounted future cash flows, an impairment charge is recognized in the amount by which the carrying amount of the asset exceeds the fair value of the asset.

During 2022, the Company ceased using leased properties in California and Maryland as part of efforts to centralize our workforce which resulted in an impairment charge of $9 million for lease ROU assets and property and equipment related to abandoned leases. The impairment was recorded in the general and administrative expense line of the consolidated statements of operations. The leases related to the North America segment.

Acquired technology and data, customer base assets, trade names and other intangible assets are related to the Company's acquisitions. Acquired technology and data is amortized on a straight-line basis over periods ranging from 2 years to 7 years. Acquired intangible assets characterized as customer base assets consist of acquired customer contracts and the related customer relationships and are amortized over periods ranging from 3 years to 13 years. Acquired customer bases are amortized on an accelerated or straight-line basis depending on the expected economic benefit of the intangible asset. Acquired trade names and other intangible assets are amortized on a straight-line basis over periods ranging from 3 years to 15 years. In the fourth quarter of 2021, the Company began removing fully amortized intangible assets from the cost and accumulated amortization amounts disclosed.

Goodwill represents the future economic benefits arising from a business combination and is calculated as the excess of the purchase consideration paid in a business combination over the fair value of the net identifiable assets acquired. Goodwill is not amortized, but instead is assigned to each of the Company's reporting units and tested for impairment at least annually, on October 1, or more frequently if an event or other circumstance indicates that the fair value of a reporting unit may be below its carrying amount. We may first assess qualitative factors to evaluate whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount, or elect to bypass the qualitative assessment. If it is determined that it is more likely than not that the fair value of a reporting unit is less than its carrying value, or we elect to bypass the qualitative assessment, we then perform a quantitative assessment by determining the fair value of each reporting unit. The estimate of the fair value of each reporting unit is based on a projected discounted cash flow model that includes significant assumptions and estimates including the discount rate, growth rate and future financial performance. Assumptions about the discount rate are based on a weighted average cost of capital for comparable companies. Assumptions about the growth rate and future financial performance of a reporting unit are based on the Company's forecasts, business plans, economic projections and anticipated future cash flows. The fair value of each reporting unit is compared to the carrying amount of the reporting unit. If the carrying value of the reporting unit exceeds the fair value, then an impairment loss is recognized for the difference.

See Notes 5, 9 and 10 for further discussion of acquisitions, goodwill and intangible assets, respectively.

Debt Issuance Costs

Costs incurred in connection with the issuance of long-term debt are deferred and amortized as interest expense over the term of the related debt using the effective interest method for term debt and on a straight-line basis for revolving debt. The Company made a policy election to classify deferred issuance costs on the revolving credit facility as a long-term asset on its consolidated balance sheets. Upon a refinancing or amendment, previously capitalized debt issuance costs are expensed and included in loss on extinguishment of debt if the Company determines that there has been a substantial modification of the related debt. If the Company determines that there has not been a substantial modification of the related debt, any previously capitalized debt issuance costs are amortized as interest expense over the term of the new debt instrument.

See Note 11 for further discussion of the Company's accounting for its outstanding debt, revolving credit facility and related issuance costs.

Business Combinations

The Company generally allocates the purchase consideration to the tangible assets acquired and liabilities assumed and intangible assets acquired based on their estimated fair values. The purchase price is generally determined based on the fair value of the assets transferred, liabilities assumed and equity interests issued, after considering any transactions that are separate from the business combination. The excess of the fair value of purchase consideration over the fair values of these identifiable assets and liabilities is recorded as goodwill. The Company applies significant assumptions, estimates and judgments in determining the fair value of assets acquired and liabilities assumed on the acquisition date, especially with respect to intangible assets and contingent liabilities. Significant estimates in valuing certain intangible assets include, but are not limited to, future expected cash flows from acquired customer bases, acquired technology and acquired trade names, useful lives, royalty rates and discount rates. Any adjustments to provisional amounts that are identified during the measurement period are recorded in the reporting period in which the adjustment amounts are determined. Upon the conclusion of the measurement period, any subsequent adjustments are recorded to earnings.

For a given acquisition, the Company may identify certain pre-acquisition contingencies as of the acquisition date and may extend its review and evaluation of these pre-acquisition contingencies throughout the measurement period in order to obtain sufficient information to assess whether the Company includes these contingencies as a part of the fair value estimates of assets acquired and liabilities assumed and, if so, to determine their estimated amounts.

If the Company cannot reasonably determine the fair value of a pre-acquisition contingency (non-income tax related) by the end of the measurement period, which is generally the case given the nature of such matters, the Company will recognize an asset or a liability for such pre-acquisition contingency if: (i) it is probable that an asset existed or a liability had been assumed at the acquisition date and (ii) the amount of the asset or liability can be reasonably estimated. Subsequent to the measurement period, changes in the Company's estimates of such contingencies will affect earnings and could have a material effect on its results of operations and financial position.

In addition, uncertain tax positions and tax related valuation allowances assumed in connection with a business combination are initially estimated as of the acquisition date. The Company reevaluates these items based upon facts and circumstances that existed as of the acquisition date with any adjustments to its preliminary estimates being recorded to goodwill, provided that the Company is within the measurement period. Subsequent to the measurement period, changes to these uncertain tax positions and tax related valuation allowances will affect the Company's provision for income taxes in its consolidated statements of operations and comprehensive income and could have a material impact on its results of operations and financial position.

Recent Accounting Pronouncements

Recently Adopted Accounting Pronouncements

In 2021, the Company adopted ASU 2021-08, *Business Combinations (Topic 805), Accounting for Contract Assets and Contract Liabilities from Contracts with Customers*. This guidance requires contract assets and liabilities acquired or assumed in an acquisition be measured in accordance with the accounting framework for revenue from contracts with customers as if the Company had originated the acquired contract. This is an exception to the general requirement to measure assets acquired and liabilities assumed at their fair value on the acquisition date. The Company applied this revised guidance to all acquisitions in the year ended December 31, 2021. The application of this guidance to contract assets and contract liabilities acquired or assumed in connection with the Company's acquisitions for the year ended December 31, 2021 did not have a material impact on the Company's consolidated financial statements and related disclosures.

Recent Accounting Pronouncements Not Yet Adopted

On March 12, 2020, the FASB issued ASU 2020-04, *Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting.* ASC 848 contains optional expedients and exceptions for applying GAAP to debt, contracts, hedging relationships and other transactions affected by reference rate reform. The provisions of ASC 848 must be applied to all contracts that are accounted for under a Topic, Subtopic or Industry Subtopic for all transactions other than derivatives, which may be applied at a hedging relationship level. Originally, the guidance was effective for fiscal years beginning after January 1, 2021, including interim periods within those fiscal years. However, in response to the deferral of the cessation date for certain overnight LIBOR measures, the FASB issued ASU 2022-06 on December 21, 2022, which extends the sunset date of Topic 848 to December 31, 2024. The Company's 2020 Credit Agreement provides for a $750 million revolving credit facility and a letter of credit sublimit of $20 million, with interest rates benchmarked to LIBOR. As of December 31, 2022, no amounts were issued or drawn under this facility. The Company is currently evaluating the impact this guidance will have on its consolidated financial statements and related disclosures.

In March 2022, the FASB issued ASU 2022-02, *Financial Instruments-Credit Losses (Topic 326): Troubled Debt Restructurings and Vintage Disclosures.* This ASU eliminates prior guidance on troubled debt restructurings for creditors that have adopted ASU 2016-13, *Measurement of Credit Losses in Financial Statements*, and adds enhanced disclosures for creditors with respect to loan refinancings and restructurings for borrowers experiencing financial difficulty. In addition, the ASU amends guidance on "vintage disclosures" to require the disclosure of current period gross write offs by year of origination. This guidance is effective for fiscal years beginning after December 15, 2022. The Company expects there to be no material impact on its consolidated financial statements and related disclosures from the adoption of this ASU.

3. REVENUE FROM CONTRACTS WITH CUSTOMERS

Disaggregated Revenue

The Company provides information, analytics and online marketplaces to the commercial real estate industry, hospitality industry, residential industry and related professionals. The revenues by operating segment and type of service consist of the following (in thousands):

	Year Ended December 31,								
	2022			2021			2020		
	North America	International	Total	North America	International	Total	North America	International	Total
CoStar	$ 800,183	$ 36,797	$ 836,980	$ 686,948	$ 35,873	$ 722,821	$ 634,205	$ 30,530	$ 664,735
Information services	124,951	32,431	157,382	113,723	27,932	141,655	104,117	25,953	130,070
Multifamily	745,388	—	745,388	678,680	—	678,680	598,555	—	598,555
LoopNet[1]	223,758	7,183	230,941	204,816	2,695	207,511	179,371	434	179,805
Residential[1]	73,747	—	73,747	74,583	—	74,583	—	—	—
Other Marketplaces[1]	137,961	—	137,961	118,885	—	118,885	85,854	—	85,854
Total revenues	$ 2,105,988	$ 76,411	$ 2,182,399	$ 1,877,635	$ 66,500	$ 1,944,135	$ 1,602,102	$ 56,917	$ 1,659,019

[1] As of September 30, 2021, Commercial Property and Land revenue has been further disaggregated into LoopNet, Residential and Other Marketplaces. Prior period amounts have been adjusted to reflect this presentation.

Deferred Revenue

Changes in deferred revenue for the period were as follows (in thousands):

Balance at December 31, 2021[1]	$ 96,724
Revenue recognized in the current period from the amounts in the beginning balance	(93,816)
New deferrals, net of amounts recognized in the current period	102,410
Effects of foreign currency	(1,536)
Balance at December 31, 2022[2]	$ 103,782

[1] Deferred revenue was comprised of $95.5 million of current liabilities and $1.2 million of noncurrent liabilities classified within lease and other long-term liabilities on the Company's consolidated balance sheet as of December 31, 2021.
[2] Deferred revenue was comprised of $103.6 million of current liabilities and $0.2 million of noncurrent liabilities classified within lease and other long-term liabilities on the Company's consolidated balance sheet as of December 31, 2022. This balance includes $1.8 million of net new deferrals recognized in connection with business acquisitions made in 2022. See Note 5 for further discussion of acquisitions.

Contract Assets

The Company had contract assets of $12.4 million and $9.2 million as of December 31, 2022 and December 31, 2021, respectively, which are generated when contractual billing schedules differ from revenue recognition timing. Contract assets represent a conditional right to consideration for satisfied performance obligations that becomes a receivable when the conditions are satisfied. Current contract assets are included in prepaid expenses and other current assets and non-current contract assets are included in deposits and other assets on the Company's consolidated balance sheets.

Commissions

Commissions expense is included in selling and marketing expense in the Company's consolidated statements of operations. The Company determined that no deferred commissions were impaired as of both December 31, 2022 and December 31, 2021. Commissions expense activity for the years ended December 31, 2022, 2021 and 2020 was as follows (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Commissions incurred	$ 162,126	$ 117,391	$ 97,1
Commissions capitalized in the current period	(116,796)	(72,038)	(64,3
Amortization of deferred commissions costs	76,082	63,391	60,5
Total commissions expense	$ 121,412	$ 108,744	$ 93,3

See Note 2 for the Company's policy on accounting for commissions.

Unsatisfied Performance Obligations

Remaining contract consideration for which revenue had not been recognized due to unsatisfied performance obligations was $436.1 million as of December 31, 2022, which the Company expects to recognize over the next five years. This amount does not include contract consideration for contracts with a duration of one year or less.

4. ALLOWANCE FOR CREDIT LOSSES

The following tables detail the activity related to the allowance for credit losses for trade receivables by portfolio segment (in thousands):

	Year Ended December 31, 2022					
	CoStar	Information services	Multifamily	LoopNet	Other Marketplaces	Total
Beginning balance at December 31, 2021	$ 5,380	$ 1,820	$ 3,393	$ 1,968	$ 813	$ 13,374
Current-period provision (release) for expected credit losses	9,168	(557)	5,813	3,807	78	18,309
Write-offs charged against the allowance, net of recoveries and other	(10,038)	(212)	(4,859)	(4,379)	—	(19,488)
Ending balance at December 31, 2022	$ 4,510	$ 1,051	$ 4,347	$ 1,396	$ 891	$ 12,195

	Year Ended December 31, 2021					
	CoStar	Information services	Multifamily	LoopNet	Other Marketplaces	Total
Beginning balance at December 31, 2020	$ 5,531	$ 2,739	$ 4,387	$ 1,667	$ 786	$ 15,110
Current-period provision (release) for expected credit losses	5,699	(392)	3,057	2,564	—	10,928
Write-offs charged against the allowance, net of recoveries and other	(5,850)	(527)	(4,051)	(2,263)	27	(12,664)
Ending balance at December 31, 2021	$ 5,380	$ 1,820	$ 3,393	$ 1,968	$ 813	$ 13,374

	Year Ended December 31, 2020					
	CoStar	Information services	Multifamily	LoopNet	Other Marketplaces	Total
Beginning balance at December 31, 2019	$ 1,264	$ 624	$ 1,195	$ 576	$ 889	$ 4,548
Current-period provision for expected credit losses	11,622	2,649	7,644	3,213	84	25,212
Write-offs charged against the allowance, net of recoveries and other	(7,355)	(534)	(4,452)	(2,122)	(187)	(14,650)
Ending balance at December 31, 2020	$ 5,531	$ 2,739	$ 4,387	$ 1,667	$ 786	$ 15,110

Credit loss expense is included in general and administrative expenses on the consolidated statements of operations. Credit loss expense related to contract assets was not material for the years ended December 31, 2022, 2021 and 2020. The majority of the Residential portfolio segment revenue is e-commerce based and does not result in accounts receivable.

5. ACQUISITIONS

Business Immo

In April 2022, the Company acquired Business Immo, a leading commercial real estate news service provider in France, for €5.8 million ($6.3 million), net of cash acquired and the assumption of outstanding debt. As part of the acquisition, the Company recorded goodwill and intangible assets of $7.1 million and $3.9 million, respectively. The net assets of Business Immo were recorded at their estimated fair value. The purchase price allocation is preliminary, subject primarily to the Company's assessment of certain tax matters and contingencies. The Company retired the assumed debt in the second quarter of 2022, which is included in payments of long-term debt on the consolidated statements of cash flow.

BureauxLocaux

In October 2021, CoStar UK acquired BureauxLocaux, a commercial real estate digital marketplace in France, for a base purchase price of €35.0 million ($40.6 million) in cash, subject to customary working capital and other post-closing adjustments which were settled in the fourth quarter of 2021. As part of the acquisition, the Company recorded goodwill and intangible assets of $27.4 million and $18.3 million, respectively, in the Company's International operating segment. The net assets of BureauxLocaux were recorded at their estimated fair value.

Homes.com

In May 2021, the Company closed the Homes.com Acquisition in which the Company acquired all of the issued and outstanding equity interests in Homes Group for a purchase price of $150.0 million in cash, subject to customary working capital and other post-closing adjustments which resulted in total consideration of $152.2 million. Homes Group operates Homes.com, a residential marketplace hosted on the website Homes.com and mobile apps that provided real estate advertising and marketing services. In November 2022 CoStar Group integrated the operations of Homes.com and Homesnap.

The following table summarizes the amounts recorded for acquired assets and assumed liabilities recorded at their fair values as of the acquisition date (in thousands):

	Final: May 24, 2021
Cash and cash equivalents	$ —
Accounts receivable	1,798
Lease right-of-use assets	371
Goodwill	91,875
Intangible assets	53,400
Deferred tax assets	7,862
Lease liabilities	(371)
Deferred revenue	(1,521)
Other assets and liabilities	(1,239)
Fair value of identifiable net assets acquired	$ 152,175

The net assets of Homes Group were recorded at their estimated fair values. In valuing the acquired assets and assumed liabilities, fair value estimates were based primarily on future expected cash flows, market rate assumptions for contractual obligations and appropriate discount rates. The estimated fair value of the customer base assets incorporated significant assumptions that had a material impact on the estimated fair value, such as discount rates, projected revenue growth rates, customer attrition rates and profit margins.

The following table summarizes the fair values (in thousands) of the identifiable intangible assets acquired in the Homes.com Acquisition included in the Company's North America operating segment, their related estimated useful lives (in years) and their respective amortization methods:

	Estimated Fair Value	Estimated Useful Life	Amortization Method
Customer base	$ 32,000	8	Accelerated
Trade name	21,000	15	Straight-line
Technology	400	2	Straight-line
Total intangible assets	$ 53,400		

Goodwill is calculated as the excess of the consideration transferred over the net assets recognized and represents the future economic benefits arising from other assets acquired that could not be individually identified and separately recognized. Specifically, the goodwill recorded as part of the Homes.com Acquisition includes but is not limited to: (i) the expected synergies and other benefits that the Company believes will result from combining its operations with Homes.com operations and (ii) any intangible assets that do not qualify for separate recognition, such as the assembled workforce. The $91.9 million of goodwill recorded as part of the acquisition is associated with the Company's North America operating segment, of which $20.0 million is expected to be deductible for income tax purposes.

Transaction costs associated with the Homes.com Acquisition were not material. The Company paid $5.0 million into a cash escrow account for stay bonuses for certain Homes.com employees and recognized compensation expense for the stay bonus over the six-month post-combination period. Upon acquisition, the Company assessed the probability it would be required to pay certain state tax liabilities and recorded an accrual of $6.6 million determined in accordance with the provisions of ASC 450, *Contingencies*, as the fair value was not determinable. Landmark has agreed to indemnify the Company for tax liabilities related to periods prior to the acquisition and an indemnification asset was established for $6.6 million in the purchase price allocation.

Homesnap

In December 2020, the Company closed the Homesnap Acquisition, acquiring all of the issued and outstanding equity interests in Homesnap, Inc. for a purchase price of $250.0 million in cash. The Homesnap Acquisition enabled CoStar Group to enter the residential real estate market and expand the markets in which the Company competes. Homesnap, Inc. operates a residential marketplace through its Homesnap.com website and mobile apps which is integrated with an online and mobile software platform that provides applications to optimize residential real estate agent workflow and reinforce the agent-client relationship. Homesnap, Inc. has relationships, data, software and tools for residential real estate professionals that are complementary to CoStar Group’s existing offerings.

The following table summarizes the amounts recorded for acquired assets and assumed liabilities recorded at their fair values as of the acquisition date (in thousands):

	Final: December 22, 2020
Cash, cash equivalents and restricted cash	$ 10,225
Accounts receivable	662
Lease right-of-use assets	3,437
Goodwill	184,371
Intangible assets	67,000
Deferred tax assets, net	(2,778)
Lease liabilities	(3,375)
Deferred revenue	(4,000)
Other assets and liabilities	(5,188)
Fair value of identifiable net assets acquired	$ 250,354

The net assets of Homesnap, Inc. were recorded at their estimated fair values. In valuing the acquired assets and assumed liabilities, fair value estimates were based primarily on future expected cash flows, market rate assumptions for contractual obligations and appropriate discount rates. The estimated fair value of the customer base assets incorporated significant

assumptions that had a material impact on the estimated fair value, such as discount rates, projected revenue growth rates, customer attrition rates and profit margins.

The following table summarizes the fair values (in thousands) of the identifiable intangible assets included in the Company's North America operating segment, their related estimated useful lives (in years) and their respective amortization methods:

	Estimated Fair Value	Estimated Useful Life	Amortization Method
Customer base	$ 45,000	10	Accelerated
Trade name	7,000	10	Straight-line
Technology	15,000	6	Straight-line
Total intangible assets	$ 67,000		

Goodwill is calculated as the excess of the consideration transferred over the net assets recognized and represents the future economic benefits arising from other assets acquired that could not be individually identified and separately recognized. Specifically, the goodwill recorded as part of the Homesnap Acquisition includes but is not limited to: (i) the expected synergies and other benefits that the Company believes will result from combining its operations with Homesnap, Inc.'s operations and (ii) any intangible assets that do not qualify for separate recognition, such as the assembled workforce. The $184.4 million of goodwill recorded as part of the acquisition is associated with the Company's North America operating segment. Goodwill recognized is not deductible for income tax purposes.

Transaction costs associated with the Homesnap Acquisition were not material.

Ten-X

In June 2020, the Company closed the Ten-X Acquisition, acquiring all of the issued and outstanding equity interests in Ten-X for a purchase price of $188.0 million in cash. Ten-X operates an online auction platform for commercial real estate. The Ten-X Acquisition enable the Company to create an end-to-end commercial real estate platform, combining LoopNet and the Company's online audience of buyers with Ten-X’s leadership in online auctions for commercial properties.

The following table summarizes the amounts recorded for acquired assets and assumed liabilities recorded at their fair values as of the acquisition date (in thousands):

	Final: June 24, 2020
Cash and cash equivalents	$ 3,290
Accounts receivable	131
Lease right-of-use assets	4,945
Goodwill	134,322
Intangible assets	58,000
Lease liabilities	(4,945)
Deferred tax liabilities, net	(2,981)
Other assets and liabilities	(5,047)
Fair value of identifiable net assets acquired	$ 187,715

The net assets of Ten-X were recorded at their estimated fair values. In valuing the acquired assets and assumed liabilities, fair value estimates were based primarily on future expected cash flows, market rate assumptions for contractual obligations and appropriate discount rates. The estimated fair value of the customer base assets incorporated significant assumptions that had a material impact on the estimated fair value, such as discount rates, projected revenue growth rates, customer attrition rates and profit margins.

The following table summarizes the fair values (in thousands) of the identifiable intangible assets included in the Company's North America operating segment, their related estimated useful lives (in years) and their respective amortization methods:

	Estimated Fair Value	Estimated Useful Life	Amortization Method
Customer base	$ 46,000	6	Accelerated
Technology	11,000	5	Straight-line
Other intangible assets	1,000	2	Straight-line
Total intangible assets	$ 58,000		

Goodwill is calculated as the excess of the consideration transferred over the net assets recognized and represents the future economic benefits arising from other assets acquired that could not be individually identified and separately recognized. Specifically, the goodwill recorded as part of the Ten-X Acquisition includes but is not limited to: (i) the expected synergies and other benefits that the Company believes will result from combining its operations with Ten-X's operations and (ii) any intangible assets that do not qualify for separate recognition, such as the assembled workforce. The $134.3 million of goodwill recorded as part of the acquisition is associated with the Company's North America operating segment. Goodwill recognized is not deductible for income tax purposes.

The transaction costs associated with the Ten-X Acquisition were not material. The Company paid $3.0 million in incentive compensation to Ten-X employees negotiated as part of the acquisition, and this expense was recognized in the post-combination period.

Pro Forma Financial Information (unaudited)

The unaudited pro forma financial information presented below reflects the consolidated results of operations of the Company assuming the Homes.com Acquisition had taken place on January 1, 2020 and the Homesnap Acquisition and Ten-X Acquisition had taken place on January 1, 2019. The unaudited pro forma financial information for all periods presented includes amortization charges from acquired intangible assets, retention compensation, as referenced above, and the related tax effects, along with certain other accounting effects, but excludes the impacts of any expected operational synergies. The unaudited pro forma financial information, as presented below, is for informational purposes only and is not necessarily indicative of the results of operations that would have been achieved if the acquisitions had not taken on place on the dates listed above.

The unaudited pro forma financial information, in the aggregate, was as follows (in thousands, except per share data):

	Year Ended December 31,	
	2021	2020
Revenue	$ 1,962,102	$ 1,758,612
Net income	$ 286,718	$ 197,994
Net income per share - basic	$ 0.74	$ 0.52
Net income per share - diluted	$ 0.73	$ 0.51

The impact of the Homes.com Acquisition on the Company's revenues and net income in the consolidated statements of operations from May 24, 2021 through December 31, 2021 was an increase of $13.6 million and a decrease of $23.5 million, respectively. The impact of the Homesnap Acquisition on the Company's revenues and net income in the consolidated statements of operations from December 22, 2020 through December 31, 2020 was not material. The impact of the Ten-X Acquisition on the Company's revenues and net income in the consolidated statements of operations from June 24, 2020 through December 31, 2020 was an increase of $31.8 million and a decrease of $10.0 million, respectively. The pro forma financial information of the BureauxLocaux Acquisition and Business Immo Acquisition was not material.

6. INVESTMENTS AND FAIR VALUE MEASUREMENTS

Fair value is defined as the price that would be received in the sale of an asset or paid to transfer a liability in an orderly transaction between market participants. There is a three-tier fair value hierarchy, which categorizes the inputs used in measuring fair value. These tiers include: Level 1, defined as observable inputs such as quoted prices in active markets for identical assets or liabilities; Level 2, defined as inputs other than quoted prices in active markets that are either directly or indirectly observable; and Level 3, defined as unobservable inputs for which little or no market data exists, therefore requiring an entity to develop its own assumptions.

The Company's financial assets comprise Level 1 cash equivalents with original maturities of three months or less in the amount of $4.8 billion and $3.0 billion as of December 31, 2022 and December 31, 2021, respectively. The Company had no Level 2 or Level 3 financial assets measured at fair value.

The Company holds other financial instruments, including cash deposits, accounts receivable, accounts payable, accrued expenses and Senior Notes. The carrying value for such financial instruments, other than the Senior Notes, each approximated their fair values as of December 31, 2022 and December 31, 2021. The estimated fair value of the Company's outstanding Senior Notes using quoted prices from the over-the-counter markets, considered Level 2 inputs, was $0.8 billion and $1.0 billion as of December 31, 2022 and December 31, 2021, respectively.

7. LEASES

The Company has operating leases for its office facilities, data centers and certain vehicles, as well as finance leases for office equipment. The Company's leases have remaining terms of less than one year to six years. The leases contain various renewal and termination options. The period that is subject to an option to extend the lease is included in the lease term if it is reasonably certain that the option will be exercised. The period that is subject to an option to terminate the lease is included if it is reasonably certain that the option will not be exercised.

Lease costs related to the Company's operating leases included in the consolidated statements of operations were as follows (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Operating lease costs:			
Cost of revenues	$ 8,428	$ 10,110	$ 11,632
Software development	7,201	6,947	6,020
Selling and marketing (excluding customer base amortization)	12,642	11,911	10,356
General and administrative	5,360	5,911	4,827
Total operating lease costs	$ 33,631	$ 34,879	$ 32,835

The impact of lease costs related to finance leases and short-term leases was not material for the years ended December 31, 2022, 2021 and 2020.

Supplemental balance sheet information related to operating leases was as follows (in thousands):

		Year Ended December 31,	
Balance	**Balance Sheet Location**	**2022**	**2021**
Operating lease liabilities		$ 118,294	$ 134,150
Less: imputed interest		(6,238)	(8,512)
Present value of lease liabilities		112,056	125,638
Less: current portion of lease liabilities	Lease liabilities	36,049	26,268
Long-term lease liabilities	Lease and other long-term liabilities	$ 76,007	$ 99,370
Weighted-average remaining lease term in years		3.6	4.0
Weighted-average discount rate		3.1 %	3.1 %

Balance sheet information related to finance leases was not material as of December 31, 2022 and December 31, 2021.

Supplemental cash flow information related to leases was as follows (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Cash paid for amounts included in the measurement of lease liabilities:			
Operating cash flows used in operating leases	$ 41,550	$ 37,298	$ 37,006
ROU assets obtained in exchange for lease obligations:			
Operating leases	$ 19,967	$ 34,247	$ 19,746

8. PROPERTY AND EQUIPMENT

Property and equipment consists of the following (in thousands):

	December 31,	
	2022	2021
Leasehold improvements	$ 108,901	$ 75,634
Furniture, office equipment and vehicles	52,610	47,540
Computer hardware and software	43,830	30,179
Aircrafts	44,209	68,670
Land	52,227	38,774
Buildings	105,060	96,496
Property and equipment, gross	406,837	357,293
Accumulated depreciation and amortization	(85,587)	(85,862)
Property and equipment, net	$ 321,250	$ 271,431

Depreciation expense for property and equipment was approximately $29.1 million, $29.0 million and $28.8 million, for the years ended December 31, 2022, 2021 and 2020, respectively. In 2022, the Company removed $27.6 million of property and equipment, that was fully depreciated from property and equipment, gross and accumulated depreciation and amortization, which had no net impact on the Company's financial results.

In August 2022, the Company entered into an agreement to sell an aircraft subject to customary condition and inspection terms. The sale of the aircraft closed in October 2022 for cash consideration of $24.9 million. The Company recorded a gain on the sale of the aircraft of $3.3 million, which was recorded to general and administrative expenses in the consolidated statements of operations. The aircraft related to the North America segment.

9. GOODWILL

The changes in the carrying amount of goodwill by operating segment consist of the following (in thousands):

	North America	International	Total
Goodwill, December 31, 2020	$ 2,085,494	$ 150,505	$ 2,235,999
Acquisitions, including measurement period adjustments[(1)]	60,352	27,441	87,793
Effect of foreign currency translation	—	(2,777)	(2,777)
Goodwill, December 31, 2021	2,145,846	175,169	2,321,015
Acquisitions, including measurement period adjustments[(2)]	3,401	7,095	10,496
Effect of foreign currency translation	—	(16,752)	(16,752)
Goodwill, December 31, 2022	$ 2,149,247	$ 165,512	$ 2,314,759

[(1)] North America goodwill for the year ended December 31, 2021 includes goodwill recorded in connection with the acquisition of Homes.com of $88.5 million, offset by measurement period adjustments of $1.4 million for Ten-X and $26.7 million for Homesnap recorded during the year ended December 31, 2021 primarily related to the measurement of the fair value of Homesnap customer relationships in the first quarter of 2021. International goodwill recorded in connection with the acquisition of BureauxLocaux was $27.4 million. See Note 5 for further discussion.
[(2)] North America goodwill recorded during the year ended December 31, 2022 relates to a measurement period adjustment for income taxes for Homes.com of $3.4 million. International goodwill recorded in connection with the acquisition of Business Immo was $7.1 million.

Of the goodwill generated from acquisitions completed in 2021, $20 million is expected to be deductible for tax purposes. Goodwill generated from acquisitions completed in 2022 and was not deductible for tax purposes.

No impairments of the Company's goodwill were recognized during the years ended December 31, 2022, 2021 and 2020.

10. INTANGIBLE ASSETS

Intangible assets consist of the following (in thousands, except amortization period data):

	December 31,		Weighted-Average Amortization Period (in years)
	2022	2021	
Acquired technology and data	$ 40,422	$ 41,979	5
Accumulated amortization	(20,693)	(15,333)	
Acquired technology and data, net	19,729	26,646	
Acquired customer base	464,242	569,666	10
Accumulated amortization	(287,051)	(319,039)	
Acquired customer base, net	177,191	250,627	
Acquired trade names and other intangible assets	247,361	262,136	13
Accumulated amortization	(114,975)	(103,747)	
Acquired trade names and other intangible assets, net	132,386	158,389	
Intangible assets, net	$ 329,306	$ 435,662	

Amortization expense for intangible assets was approximately $102.6 million, $103.6 million and $88.1 million for the years ended December 31, 2022, 2021 and 2020, respectively. In 2022, the Company removed $87.7 million of intangible assets that were fully amortized from the acquired intangible assets and accumulated amortization, which had no net impact on the Company's financial results.

In the aggregate, the Company expects the future amortization expense for intangible assets existing as of December 31, 2022 to be approximately $69.1 million, $57.0 million, $45.5 million, $37.3 million and $30.2 million for the years ending December 31, 2023, 2024, 2025, 2026 and 2027, respectively.

Intangible assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying value of such assets may not be recoverable. No impairments of the Company's intangible assets were recognized during the years ended December 31, 2022, 2021 and 2020. The Company decided to eliminate usage fees related to agent access to a Homesnap product charged to a specific customer class. This resulted in an acceleration of $16.3 million of amortization expense in 2022 for acquired customer base for this customer class.

11. LONG-TERM DEBT

The table below presents the components of outstanding debt (in thousands):

	December 31, 2022	December 31, 2021
2.800% Senior Notes due July 15, 2030	$ 1,000,000	$ 1,000,000
2020 Credit Agreement, due July 1, 2025	—	—
Total face amount of long-term debt	1,000,000	1,000,000
Senior notes unamortized discount and issuance costs	(10,790)	$ (12,056)
Long-term debt, net	$ 989,210	$ 987,944

Senior Notes

On July 1, 2020, the Company issued $1.0 billion aggregate principal amount of 2.800% Senior Notes due July 15, 2030. The Senior Notes were sold to a group of financial institutions as initial purchasers who subsequently resold the Senior Notes to non-U.S. persons pursuant to Regulation S under the Securities Act, and to persons reasonably believed to be qualified institutional buyers pursuant to Rule 144A under the Securities Act at a purchase price equal to 99.921% of their principal amount. Interest on the Senior Notes is payable semi-annually in arrears on January 15 and July 15. The Senior Notes may be redeemed in whole or in part by the Company (a) at any time prior to April 15, 2030 at a redemption price equal to 100% of the principal amount of the Senior Notes, plus the Applicable Premium (as calculated in accordance with the indenture governing the Senior Notes), and any accrued and unpaid interest, if any, on the principal amount of Senior Notes being redeemed to, but excluding, the redemption date, and (b) on or after April 15, 2030 at a redemption price equal to 100% of the principal amount of the Senior Notes, plus any accrued and unpaid interest, if any, on the principal amount of Senior Notes being redeemed to, but excluding, the redemption date. The Company’s obligations under the Senior Notes are guaranteed on a senior, unsecured basis by the Company’s domestic wholly owned subsidiaries and the indenture governing the Senior Notes contains covenants, events of default and other customary provisions with which the Company was in compliance as of December 31, 2022.

Revolving Credit Facility

On July 1, 2020, the Company entered into the 2020 Credit Agreement, which provides for a $750 million revolving credit facility with a term of five years (maturing July 1, 2025) and a letter of credit sublimit of $20 million from a syndicate of financial institutions as lenders and issuing banks. A commitment fee of 0.25% to 0.30% per annum, depending on the Total Leverage Ratio (defined in 2020 Credit Agreement), is payable quarterly in arrears based on the unused revolving commitment.

Subject to certain conditions, on no more than five occasions, the Company may request increases in the amount of revolving commitments and/or the establishment of term commitments under the 2020 Credit Agreement. Borrowings under the 2020 Credit Agreement will bear interest at a floating rate which can be, at the Company’s option, either (a) an alternate base rate plus an applicable rate ranging from 0.50% to 1.25% or (b) a LIBOR or EURIBOR (with a floor of 0.0%) for the specified interest period plus an applicable rate ranging from 1.50% to 2.25%, in each case depending on the Company's Total Leverage Ratio (as defined in the 2020 Credit Agreement). As LIBOR may not always be available to the Company as a base interest rate for borrowings under the credit facility, the 2020 Credit Agreement allows the Company and the administrative agent under the 2020 Credit Agreement to amend the 2020 Credit Agreement to replace LIBOR with one or more SOFR-based rates or another alternative benchmark rate. Funds drawn down on the revolving credit facility pursuant to the 2020 Credit Agreement may be used for working capital and other general corporate purposes of the Company and its restricted subsidiaries. The obligations under the 2020 Credit Agreement are guaranteed by each of the Company’s current and future direct or indirect wholly owned restricted domestic subsidiaries, other than certain excluded subsidiaries, in each case subject to certain exceptions, pursuant to guarantee agreements.

The 2020 Credit Agreement includes covenants, including ones that, subject to certain exceptions, restrict the ability of the Company and its subsidiaries to (i) merge and consolidate with other companies, (ii) incur indebtedness, (iii) grant liens or security interests on assets, (iv) make investments, acquisitions, loans or advances, (v) pay dividends and (vi) sell or otherwise transfer assets. As of December 31, 2022, the Company is in a Covenant Suspension Period. During any Covenant Suspension Period, the Company will not be subject to certain of these covenants such as restrictions on the ability to incur indebtedness. The 2020 Credit Agreement also requires the Company to maintain a Total Leverage Ratio (as defined in the 2020 Credit Agreement) not exceeding 4.50 to 1.00. The Company was in compliance with the covenants in the 2020 Credit Agreement as of December 31, 2022.

As of December 31, 2022, the Company had not drawn any amounts under this facility.

The Company had $2.7 million and $3.8 million of deferred debt issuance costs as of December 31, 2022 and December 31, 2021, respectively, in connection with the 2020 Credit Agreement. These amounts are included in deposits and other assets on the Company's consolidated balance sheets.

For the years ended December 31, 2022, 2021 and 2020, the Company recognized interest expense as follows (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Interest on outstanding borrowings	$ 28,000	$ 28,000	$ 18,509
Amortization of Senior Notes discount and issuance costs	2,365	2,327	1,658
Commitment fees and other	1,960	1,989	1,627
Total interest expense	$ 32,325	$ 32,316	$ 21,794

12. INCOME TAXES

The components of the provision for income taxes attributable to operations consist of the following (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Current:			
Federal	$ 116,312	$ 61,290	$ 43,461
State	31,231	24,618	11,726
Foreign	664	1,331	195
Total current	148,207	87,239	55,382
Deferred:			
Federal	(20,455)	22,859	(9,599)
State	(9,582)	8,467	(926)
Foreign	(1,166)	(7,161)	(1,005)
Total deferred	(31,203)	24,165	(11,530)
Total provision for income taxes	$ 117,004	$ 111,404	$ 43,852

The components of deferred tax assets and liabilities consist of the following (in thousands):

	December 31,	
	2022	2021
Deferred tax assets:		
Allowance for credit losses	$ 3,373	$ 3,601
Accrued compensation	4,590	3,913
Stock compensation	20,427	18,956
Net operating losses	26,794	45,835
Accrued reserve and other	6,768	4,134
Lease liabilities	26,446	28,306
Capitalized research and development costs	45,351	—
Research and development credits	6,073	5,812
Total deferred tax assets, prior to valuation allowance	139,822	110,557
Valuation allowance	(5,241)	(5,694)
Total deferred tax assets, net of valuation allowance	134,581	104,863
Deferred tax liabilities:		
Deferred commission costs, net	(36,112)	(25,700)
Lease right-of-use assets	(18,217)	(22,574)
Prepaid expenses	(3,206)	(2,569)
Property and equipment, net	(25,691)	(21,827)
Intangible assets, net	(117,835)	(125,815)
Total deferred tax liabilities	(201,061)	(198,485)
Net deferred tax liabilities	$ (66,480)	$ (93,622)

For the years ended December 31, 2022 and 2021, the Company has not recognized deferred tax liabilities for temporary differences related to investments in foreign subsidiaries that were deemed permanently reinvested. Determination of the amount of unrecognized deferred income tax liabilities on these earnings is not practicable because such liability, if any, depends on certain circumstances existing if and when remittance occurs. A deferred tax liability will be recognized if and when the Company no longer plans to permanently reinvest these undistributed earnings.

As of December 31, 2022 and 2021, a valuation allowance has been established for certain deferred tax assets due to the uncertainty of realization. The valuation allowance as of December 31, 2022 and 2021 includes an allowance for acquired net operating losses and foreign deferred tax assets.

The Company established the valuation allowance because it is more likely than not that a portion of the deferred tax asset for certain items will not be realized based on the weight of available evidence. A valuation allowance was established for the foreign deferred tax assets due to the cumulative loss in recent years in those jurisdictions. The Company has not had sufficient taxable income historically to utilize the foreign deferred tax assets, and it is uncertain whether the Company will generate sufficient taxable income in the future to utilize the deferred tax assets. The Company has established a valuation allowance for certain acquired net operating losses where Section 382 limitations will impact the ability of the Company to utilize the net operating losses before they expire.

The Company's change in valuation allowance was a decrease of approximately $0.5 million for the year ended December 31, 2022 and a decrease of approximately $5.5 million for the year ended December 31, 2021. The decreases for the years ended December 31, 2022 and December 31, 2021 were primarily due to an international restructuring.

The Company had U.S. income before income taxes of approximately $493.2 million, $408.8 million and $290.6 million for the years ended December 31, 2022, 2021 and 2020, respectively. The Company had foreign losses before income taxes of approximately $6.7 million, $4.8 million and $19.7 million for the years ended December 31, 2022, 2021 and 2020, respectively.

The Company's provision for income taxes resulted in effective tax rates that varied from the statutory federal income tax rate as follows (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Expected federal income tax provision at statutory rate	$ 102,156	$ 84,833	$ 56,906
State income taxes, net of federal benefit	21,486	21,012	11,409
(Decrease) in valuation allowance	(453)	(4,995)	(4,848)
Research credits	(17,517)	(13,070)	(14,322)
Excess tax benefit	(1,821)	(10,933)	(21,038)
Tax reserves	1,506	(12,787)	4,762
Nondeductible compensation	11,368	10,369	5,949
International restructuring	(3,912)	34,854	—
Other adjustments	4,191	2,121	5,034
Income tax expense	$ 117,004	$ 111,404	$ 43,852

The Company has net operating loss carryforwards for international income tax purposes of approximately $24.9 million that do not expire. The Company has federal net operating loss carryforwards of approximately $95.8 million that begin to expire in 2035, state net operating loss carryforwards with a tax value of approximately $0.4 million that begin to expire in 2033 and state income tax credit carryforwards with a tax value of approximately $10.3 million primarily relating to state research and development credits and the D.C. qualified high technology company tax credit that begin to expire in 2022. The Company realized a cash benefit relating to the use of its tax loss carryforwards of approximately $12.6 million, $14.1 million and $4.8 million in December 31, 2022, 2021 and 2020, respectively.

The following table summarizes the activity related to the Company's unrecognized tax benefits (in thousands):

Unrecognized tax benefit as of December 31, 2019	$	25,467
Increase for current year tax positions		4,213
Increase for prior year tax positions		452
Expiration of the statute of limitation for assessment of taxes		(1,259)
Unrecognized tax benefit as of December 31, 2020		28,873
Increase for current year tax positions		3,024
Decrease for prior year tax positions		(5,353)
Decrease for settlements with taxing authorities		(9,924)
Expiration of the statute of limitation for assessment of taxes		(1,866)
Unrecognized tax benefit as of December 31, 2021		14,754
Increase for current year tax positions		3,394
Increase for prior year tax positions		330
Expiration of the statute of limitation for assessment of taxes		(2,325)
Unrecognized tax benefit as of December 31, 2022	$	16,153

Approximately $16.2 million and $14.8 million of the unrecognized tax benefits as of December 31, 2022 and 2021, respectively, would favorably affect the annual effective tax rate if recognized in future periods. The increase for current year tax positions of $3.4 million and increase for prior year tax positions of $0.3 million for the year ended December 31, 2022 are primarily attributable to research credits. The decrease for expiration of the statute of limitation of $2.3 million for the year ended December 31, 2022 is attributable to research credits and state apportionment reserves. The Company recognized $0.1 million, reversed $0.4 million, and recognized $0.4 million for interest and penalties in its consolidated statements of operations for the years ended December 31, 2022, 2021 and 2020, respectively. The Company had liabilities of $0.7 million, $0.6 million, and $1.0 million for interest and penalties in its consolidated balance sheets as of December 31, 2022, 2021 and 2020, respectively. The Company does not anticipate the amount of the unrecognized tax benefits will change significantly over the next twelve months.

The Company is subject to taxation in the U.S. federal jurisdiction and various states and foreign jurisdictions. The Company's federal income tax returns for tax years 2015 and 2019 through 2021 remain open to examination. Most of the Company's state income tax returns for tax years 2019 through 2021 remain open to examination. For states that have a four-year statute of limitations, the state income tax returns for tax years 2018 through 2021 remain open to examination. The Company's U.K. income tax return for tax year 2021 remains open to examination. The Company believes that an adequate provision has been made for any adjustments that may result from tax examinations.

13. COMMITMENTS AND CONTINGENCIES

The following summarizes the Company's significant contractual obligations, including related payments due by period, as of December 31, 2022 (in thousands):

Year Ending December 31,	Operating lease obligations	Long-term debt principal payments	Long-term debt principal interest payments
2023	$ 39,015	$ —	$ 28,000
2024	36,893	—	28,000
2025	19,302	—	28,000
2026	9,724	—	28,000
2027	7,880	—	28,000
Thereafter	5,480	1,000,000	84,000
Total	$ 118,294	$ 1,000,000	$ 224,000

The Company leases office facilities under various non-cancelable operating leases. The leases contain various renewal options.

See Note 7 for further discussion of the Company's operating lease commitments.

Currently, and from time to time, the Company is involved in litigation incidental to the conduct of its business. The Company records a provision for a liability when it is both probable that a liability has been incurred and the amount can be reasonably estimated. While it is reasonably possible that an unfavorable outcome may occur as a result of one or more of the Company’s current litigation matters, at this time management has concluded that the resolutions of these matters are not expected to have a material effect on the Company's consolidated financial position, future results of operations or liquidity. Legal defense costs are expensed as incurred.

14. SEGMENT REPORTING

Segment Information

The Company manages its business geographically in two operating segments, with the primary areas of measurement and decision-making being North America, which includes the U.S. and Canada, and International, which primarily includes Europe, Asia-Pacific and Latin America. Management relies on an internal management reporting process that provides revenue and operating segment net income before interest (expense) income, net, other income (expense), EBITDA. Management believes that operating segment EBITDA is an appropriate measure for evaluating the operational performance of the Company's operating segments. EBITDA is used by management to internally measure operating and management performance and to evaluate the performance of the business. However, this measure should be considered in addition to, not as a substitute for or superior to, income from operations or other measures of financial performance prepared in accordance with GAAP.

Summarized EBITDA information by operating segment consists of the following (in thousands):

	Year Ended December 31,		
	2022	2021	2020
North America	$ 577,242	$ 557,125	$ 410,852
International	5,413	7,856	(4,706)
Total EBITDA	$ 582,655	$ 564,981	$ 406,146

The reconciliation of net income to EBITDA consists of the following (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Net income	$ 369,453	$ 292,564	$ 227,128
Amortization of acquired intangible assets in cost of revenues	29,019	28,809	25,675
Amortization of acquired intangible assets in operating expenses	73,560	74,817	62,457
Depreciation and other amortization	29,127	29,018	28,812
Interest (income) expense, net	(32,125)	31,621	17,395
Other (income) expense, net	(3,383)	(3,252)	827
Income tax expense	117,004	111,404	43,852
EBITDA	$ 582,655	$ 564,981	$ 406,146

Summarized information by operating segment consists of the following (in thousands):

	December 31, 2022	December 31, 2021
Property and equipment, net		
North America	$ 320,209	$ 269,792
International	1,041	1,639
Total property and equipment, net	$ 321,250	$ 271,431
Goodwill		
North America	$ 2,149,247	$ 2,145,846
International	165,512	175,169
Total goodwill	$ 2,314,759	$ 2,321,015
Assets		
North America	$ 8,146,239	$ 6,976,752
International	256,231	280,119
Total assets	$ 8,402,470	$ 7,256,871
Liabilities		
North America	$ 1,486,237	$ 1,502,497
International	46,112	42,702
Total liabilities	$ 1,532,349	$ 1,545,199

15. STOCKHOLDER'S EQUITY

Preferred Stock

The Company has 2 million shares of preferred stock, $0.01 par value, authorized for issuance. The Board of Directors may issue the preferred stock from time to time as shares of one or more classes or series.

Common Stock

The Company has 1.2 billion shares of common stock, $0.01 par value, authorized for issuance. Dividends may be declared and paid on the common stock, subject in all cases to the rights and preferences of the holders of preferred stock and authorization by the Board of Directors. In the event of liquidation or winding up of the Company and after the payment of all preferential amounts required to be paid to the holders of any series of preferred stock, any remaining funds shall be distributed among the holders of the issued and outstanding common stock.

Common Stock Split

At the Company's 2021 Annual Meeting of Stockholders in June 2021, upon the recommendation of the Company's Board of Directors, the Company's stockholders approved the adoption of the Company's Fourth Amended and Restated Certificate of Incorporation, which increased the total number of shares of common stock that the Company is authorized to issue from 60 million to 1.2 billion. The Fourth Amended and Restated Certificate of Incorporation became effective on June 7, 2021. On June 7, 2021, the Board of Directors approved a ten-for-one stock split of the Company's outstanding shares of common stock to be effected in the form of a stock dividend. Each stockholder of record on June 17, 2021 received a dividend of nine additional shares of common stock for each then-held share, distributed after close of trading on June 25, 2021. The par value of the Company's common stock remained $0.01 per share. All applicable share and per-share amounts in the consolidated financial statements and the accompanying notes have been retroactively adjusted to reflect the impact of the stock split.

Equity Offerings

On September 20, 2022, the Company completed a public equity offering of 10.7 million shares of common stock at an offering price of $70.38 per share. Net proceeds from the public equity offering were approximately $745.7 million, after deducting approximately $4.3 million of underwriting fees, commissions and other stock issuance costs. On May 28, 2020, the Company completed a public equity offering of 26.3 million shares of common stock for $65.50 per share. Net proceeds from the public equity offering were approximately $1.7 billion, after deducting approximately $35 million of underwriting fees, commissions and other stock issuance costs. The Company intends to use the net proceeds from the sale of the securities to fund all or a portion of the costs of any strategic acquisitions it pursues in the future, to finance the growth of its business and for working capital and other general corporate purposes. General corporate purposes may include additions to working capital, capital expenditures, repayment of debt, investments in the Company’s subsidiaries and the repurchase, redemption or retirement of securities, including the Company’s common stock.

16. NET INCOME PER SHARE

The following table sets forth the calculation of basic and diluted net income per share (in thousands except per share data):

	Year Ended December 31,		
	2022	2021	2020
Numerator:			
Net income	$ 369,453	$ 292,564	$ 227,128
Denominator:			
Denominator for basic net income per share — weighted-average outstanding shares	396,284	392,210	380,726
Effect of dilutive securities:			
Stock options, restricted stock awards and restricted stock units	1,468	1,950	2,540
Denominator for diluted net income per share — weighted-average outstanding shares	397,752	394,160	383,266
Net income per share — basic[(1)]	$ 0.93	$ 0.75	$ 0.60
Net income per share — diluted[(1)]	$ 0.93	$ 0.74	$ 0.59

(1) Certain prior period amounts have been retroactively adjusted to reflect the ten-for-one stock split effected in the form of a stock dividend in June 2021.

The following table summarizes the shares underlying the unvested performance-based restricted stock and anti-dilutive securities excluded from the basic and diluted earnings per share calculations (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Performance-based restricted stock awards[(1)]	398	415	526
Anti-dilutive securities[(1)]	966	373	540

(1) Certain prior period amounts have been retroactively adjusted to reflect the ten-for-one stock split effected in the form of a stock dividend in June 2021.

17. EMPLOYEE BENEFIT PLANS

Stock Incentive Plans

In April 2007, the Company's Board of Directors adopted the CoStar Group 2007 Stock Incentive Plan (as amended, the "2007 Plan"), subject to stockholder approval, which was obtained on June 7, 2007. In April 2016, the Company's Board of Directors adopted the CoStar Group 2016 Stock Incentive Plan (as amended, the "2016 Plan"), subject to stockholder approval, which was obtained on June 9, 2016. All shares of common stock that were authorized for issuance under the 2007 Plan that, as of June 9, 2016, remained available for issuance under the 2007 Plan (excluding shares subject to outstanding awards) were rolled into the 2016 Plan and, as of that date, no shares of common stock were available for new awards under the 2007 Plan. The 2007 Plan continues to govern vested unexercised stock options issued prior to June 9, 2016. Upon the occurrence of a Change of Control, as defined in the 2007 Plan, all outstanding unexercisable options under the 2007 Plan immediately become exercisable.

The 2016 Plan provides for the grant of stock options, restricted stock, restricted stock units and stock appreciation rights to officers, employees and directors of the Company and its subsidiaries. Stock options granted under the 2016 Plan may be non-qualified or may qualify as incentive stock options. Except in limited circumstances related to a merger or other acquisition, the exercise price for an option may not be less than the fair market value of the Company's common stock on the date of grant. The vesting period for each grant of options, restricted stock, restricted stock units and stock appreciation rights under the 2016 Plan is determined by the Board of Directors or a committee thereof and is generally three to four years, subject to minimum vesting periods for restricted stock and restricted stock units of at least one year. In some cases, vesting of awards under the 2016 Plan may be based on performance conditions. The Company initially reserved approximately 22.7 million shares of common stock for issuance under the 2016 Plan, which included shares of common stock that were authorized and remained available for issuance under the 2007 Plan as of June 9, 2016. Any shares of common stock subject to (a) outstanding awards under the 2007 Plan as of June 9, 2016 or (b) outstanding awards under the 2016 Plan after June 9, 2016, that cease for any reason to be subject to such awards (other than by reason of exercise or settlement of the awards to the extent they are

exercised or settled in vested and nonforfeitable shares) will become authorized and unissued under the 2016 Plan. Pursuant to the terms of the 2016 Plan, all amounts reserved or issued under the plan were adjusted to reflect the Company's ten-for-one common stock split. Unless terminated sooner, the 2016 Plan will terminate in June 2026, but will continue to govern unexercised and unexpired awards issued under the 2016 Plan prior to that date. Approximately 14.3 million shares were available for future grant under the 2016 Plan as of December 31, 2022.

At December 31, 2022, there was approximately $107.4 million of unrecognized compensation cost related to stock incentive plans, net of estimated forfeitures, which the Company expects to recognize over a weighted-average-period of 2.4 years. The income tax benefit realized from stock-based compensation was immaterial, $2.4 million and $20.4 million for the years ended December 31, 2022, 2021 and 2020, respectively.

See Notes 2 and 12 for further discussion of stock-based compensation expense and income taxes, respectively.

Stock Options

Option activity was as follows:

	Number of Shares[1]	Range of Exercise Price[1]	Weighted-Average Exercise Price[1]	Weighted-Average Remaining Contract Life (in years)	Aggregate Intrinsic Value (in thousands)
Outstanding at December 31, 2019	2,756,580	$5.45 - $39.82	$ 26.72	6.98	$ 91,262
Granted	341,000	$66.65	$ 66.65		
Exercised	(953,130)	$19.37 - $39.82	$ 22.95		
Canceled or expired	(121,350)	$34.21 - $66.65	$ 44.31		
Outstanding at December 31, 2020	2,023,100	$10.22 - $66.65	$ 34.18	6.99	$ 117,846
Granted	159,000	$91.98	$ 91.98		
Exercised	(206,000)	$20.49 - $39.82	$ 30.78		
Outstanding at December 31, 2021	1,976,100	$10.22 - $91.98	$ 39.18	6.24	$ 80,800
Granted	202,100	$67.29	$ 67.29		
Exercised	—				
Canceled or expired	—				
Outstanding at December 31, 2022	2,178,200	$10.22 - $91.98	$ 41.79	5.60	$ 79,639
Exercisable at December 31, 2020	1,228,060	$10.22 - $39.82	$ 24.68	6.18	$ 83,204
Exercisable at December 31, 2021	1,473,420	$10.22 - $66.65	$ 29.55	5.59	$ 72,905
Exercisable at December 31, 2022	1,766,070	$10.22 - $91.98	$ 34.40	4.96	$ 76,515

[1] Certain prior period amounts have been retroactively adjusted to reflect the ten-for-one stock split effected in the form of a stock dividend in June 2021.

The aggregate intrinsic value of outstanding options is calculated as the difference between (i) the closing price of the common stock at the end of the period and (ii) the exercise price of the underlying awards, multiplied by the number of outstanding options as of the end of the period that had an exercise price less than the closing price on that date. No options were exercised in the year ended December 31, 2022. The aggregate intrinsic value of options exercised, determined as of the exercise date, was approximately $11.0 million and $49.0 million for the years ended December 31, 2021 and 2020, respectively.

The Company estimated the fair value of each option granted on the date of grant using the Black-Scholes option-pricing model, using the assumptions in the following table:

	Year Ended December 31,		
	2022	2021	2020
Dividend yield	0 %	0 %	0 %
Expected volatility	31 %	30 %	26 %
Risk-free interest rate	1.89 %	0.56 %	1.45 %
Expected life (in years)	5	5	5
Weighted-average grant date fair value[(1)]	$ 20.43	$ 25.09	$ 17.21

(1) Certain prior period amounts have been retroactively adjusted to reflect the ten-for-one stock split effected in the form of a stock dividend in June 2021.

The expected dividend yield is determined based on the Company's past cash dividend history and anticipated future cash dividend payments. The Company has never declared nor paid any dividends on its common stock and does not anticipate paying any dividends on its common stock during the foreseeable future, but intends to retain any earnings for future growth of its business. Expected volatility is calculated based on historical volatility of the daily closing price of the Company's common stock over a period consistent with the expected life of the options granted. The risk-free interest rate is based on the U.S. Treasury rate with terms similar to the expected life of the options granted. The expected life for the options is determined based on multiple factors, including historical employee behavior patterns of exercising options and post-employment termination behavior as well as expected future employee option exercise patterns.

The following table summarizes information regarding options outstanding at December 31, 2022:

	Options Outstanding			Options Exercisable	
Range of Exercise Price	Number of Shares	Weighted-Average Remaining Contractual Life (in years)	Weighted-Average Exercise Price	Number of Shares	Weighted-Average Exercise Price
$10.22 - $19.93	411,540	2.91	$ 17.62	411,540	$ 17.62
$19.94 - $27.35	350,880	4.16	$ 20.49	350,880	$ 20.49
$27.36 - $37.02	357,010	5.16	$ 34.21	357,010	$ 34.21
$37.03 - $53.24	385,670	6.10	$ 39.82	385,670	$ 39.82
$53.25 - $91.98	673,100	7.95	$ 72.83	260,970	$ 71.79
	2,178,200	5.60	$ 41.79	1,766,070	$ 34.40

Restricted Stock Awards

The Compensation Committee of the Board of Directors of the Company historically approved grants of restricted common stock to employees and directors of the Company that vest over a specific service period and to executive officers that vest based on the achievement of certain performance conditions, primarily, the achievement of a three-year cumulative revenue goal established at the grant date. The grant of awards with performance conditions supports the Company’s goal of aligning executive incentives with long-term stockholder value and ensuring that executive officers have a continuing stake in the long-term success of the Company.

The vesting of restricted common stock is subject to continuing employment requirements. Certain performance-based restricted common stock awards are also subject to a market condition such that the actual number of shares that vest at the end of the respective three-year period is determined based on the Company’s achievement of performance goals and an established Company specific TSR factor relative to the Russell 1000 Index over the same three-year performance period. At the end of the three-year performance period, if the performance condition is achieved at or above the pre-established threshold, the number of shares earned is further adjusted by a TSR payout percentage, which ranges between 80% and 120%, based on the Company’s TSR performance relative to that of the Russell 1000 Index over the respective three-year period.

The Company estimates the fair value of its equity awards with both a performance and market condition on the date of grant using a Monte-Carlo simulation valuation model. This pricing model uses multiple simulations to evaluate the probability of achieving the market condition to calculate the fair value of the awards. Expense is only recorded for awards that are expected to vest, net of estimated forfeitures. The assumptions used to estimate the fair value of awards with both a performance and a market condition were as follows:

	Year Ended December 31,		
	2022	2021	2020
Dividend yield	0 %	0 %	0 %
Expected volatility	34 %	42 %	27 %
Risk-free interest rate	1.71 %	0.20 %	1.43 %
Expected life (in years)	3	3	3
Weighted-average grant date fair value[(1)]	$ 71.19	$ 99.73	$ 72.69

(1) Certain prior period amounts have been retroactively adjusted to reflect the ten-for-one stock split effected in the form of a stock dividend in June 2021.

The expected dividend yield is determined based on the Company's past cash dividend history and anticipated future cash dividend payments. The Company has never declared nor paid any dividends on its common stock and does not anticipate paying any dividends on its common stock during the foreseeable future, but intends to retain any earnings for future growth of its business. Expected volatility is calculated based on historical volatility of the daily closing price of the common stock of the companies within the Russell 1000 Index over a period consistent with the expected life of the awards. The risk-free interest rate is based on the U.S. Treasury rate with terms similar to the expected life of the awards. The expected life is consistent with the performance measurement period of the awards.

As of December 31, 2022, the Company determined that it was probable that at least the minimum performance goals associated with restricted stock awards with performance and market conditions granted during 2022, 2021 and 2020 would be met by their forfeiture dates. The Company recorded a total of approximately $11.9 million, $8.0 million and $3.7 million of stock-based compensation expense related to restricted stock awards with performance and market conditions for the years ended December 31, 2022, 2021 and 2020, respectively. As of December 31, 2022, the Company expects to record an aggregate stock-based compensation expense of approximately $13.3 million for restricted stock awards with performance and market conditions over the periods 2023, 2024 and 2025.

The following table presents unvested restricted stock awards activity for the year ended December 31, 2022:

	Restricted Stock Awards — without Market Condition		Restricted Stock Awards — with Market Condition	
	Number of Shares	Weighted-Average Grant Date Fair Value per Share	Number of Shares	Weighted-Average Grant Date Fair Value per Share
Unvested restricted stock awards at December 31, 2021	1,782,306	$ 66.74	717,600	$ 67.40
Granted	1,277,303	$ 62.15	205,680	$ 71.19
Vested	(750,435)	$ 59.45	(238,130)	$ 42.96
Canceled	(247,280)	$ 63.15	(64,270)	$ 42.96
Unvested restricted stock awards at December 31, 2022	2,061,894	$ 67.15	620,880	$ 80.55

Restricted Stock Units

The following table presents unvested restricted stock units activity for the year ended December 31, 2022:

	Number of Units	Weighted-Average Grant Date Fair Value per Share
Unvested restricted stock units at December 31, 2021	12,485	$ 71.44
Granted	13,666	$ 60.11
Vested	(4,061)	$ 66.47
Canceled	(530)	$ 69.56
Unvested restricted stock units at December 31, 2022	21,560	$ 65.24

Management Stock Purchase Plan

The Board of Directors adopted the Company’s Management Stock Purchase Plan in December 2017 with the intent of providing selected key employees of the Company and its subsidiaries, including the Company's executive officers, the opportunity to defer a portion of their cash incentive compensation and to align management and stockholder interests through awards of DSUs under the MSPP and awards of Matching RSUs issued under the Company's 2016 Plan. Under this plan participants are permitted to elect to defer up to 100% of their annual incentive bonus or commissions earned during the year by submitting an irrevocable election in accordance with Section 409A of the Internal Revenue Code, as amended. On the date the incentive bonus or commission would otherwise be paid in cash (typically during the following calendar year), the Company awards the participant DSUs representing the number of shares of common stock with an aggregate fair market value on that date equal to the amount of compensation elected to be deferred under the MSPP. On the same date the DSUs are awarded, the participant receives a grant of Matching RSUs covering the number of shares of common stock equal up to 100% of the DSUs granted. The expense related to the DSUs is recognized on a straight-line basis during the period that the related incentive bonus or commission is earned. The Company granted 75,479 and 40,960 DSUs during the years 2022 and 2021, respectively. The expense related to the Matching RSUs is recognized over the four-year vesting period following the grant date.

The following tables presents the Matching RSU activity for the year ended December 31, 2022:

	Number of Matching RSU Shares	Weighted-Average Grant Date Fair Value per Share
Unvested MSPP restricted stock units at December 31, 2021	116,090	$ 62.66
Granted	75,479	$ 57.84
Vested	—	
Canceled	(11,138)	$ 64.66
Unvested MSPP restricted stock units at December 31, 2022	180,431	$ 60.52

Employee 401(k) Plan

The Company maintains a 401(k) Plan as a defined contribution retirement plan for all eligible employees. The 401(k) Plan provides for tax-deferred contributions of employees' salaries, limited to a maximum annual amount as established by the IRS. In addition to the traditional 401(k), effective January 1, 2015, eligible employees have the option of making an after-tax contribution to a Roth 401(k) plan or a combination of both. In each of 2022, 2021 and 2020, the Company matched 100% of employee contributions up to a maximum of 4% of total compensation. Amounts contributed to the 401(k) Plan by the Company to match employee contributions for the years ended December 31, 2022, 2021 and 2020 were approximately $21.5 million, $17.6 million and $15.4 million, respectively. The Company had no administrative expenses in connection with the 401(k) Plan for each of the years ended December 31, 2022, 2021 and 2020.

Employee Pension Plan

The Company maintains a GPP Plan for all eligible employees in the Company's U.K. offices. The GPP Plan is a defined contribution plan. Employees are eligible to contribute a portion of their salaries, subject to a maximum annual amount as established by Her Majesty's Revenue and Customs. In each of 2022, 2021 and 2020, the Company's matching contribution was based on the percentage contributed by the employee, up to a maximum of 6% of total compensation. Amounts contributed to the GPP Plan by the Company to match employee contributions for the years ended December 31, 2022, 2021 and 2020, were approximately $1.0 million, $0.9 million and $0.9 million, respectively.

Registered Retirement Savings Plan

As of January 1, 2015, the Company introduced a RRSP for all eligible employees in the Company's Canadian offices. In each of 2022, 2021 and 2020, the Company matched 100% of employee contributions up to a maximum of 4% of total compensation. Amounts contributed to the RRSP by the Company to match employee contributions were approximately $0.1 million for each of the years ended December 31, 2022, 2021 and 2020.

Employee Stock Purchase Plan

As of August 1, 2006, the Company introduced an ESPP, pursuant to which eligible employees participating in the plan authorize the Company to withhold specified amounts from the employees' compensation and use the withheld amounts to purchase shares of the Company's common stock at 90% of the market price. Participating employees are able to purchase common stock under this plan during each offering period. An offering period begins the second Saturday before each of the Company's regular pay dates and ends on each of the Company's regular pay dates. On June 2, 2021, the Company's stockholders approved an amendment to the ESPP to increase the number of shares available for purchase under the ESPP by 1 million shares. The Company registered the issuance of these additional shares under the ESPP pursuant to the registration statement filed on July 28, 2021. There were 1,010,267 and 1,233,863 shares available for purchase under the ESPP as of December 31, 2022 and 2021, respectively, and approximately 223,596 and 152,047 shares of the Company's common stock were purchased under the ESPP during 2022 and 2021, respectively.

18. SUBSEQUENT EVENTS

The Company has evaluated all events through the date of issuance of the consolidated financial statements and have concluded that there are no recognized or non-recognized subsequent events that require disclosure.

SUBSIDIARIES OF THE REGISTRANT

Entity	**Jurisdiction**
BIH	France
Business Immo	France
Comreal Info	France
CoStar España, S.L.	Spain
CoStar Europe Ltd.	United Kingdom
CoStar Field Research, LLC	Delaware
CoStar International, LLC	Delaware
CoStar Italy S.R.L.	Italy
CoStar Realty Information Canada Ltd.	Canada
CoStar Realty Information, Inc.	Delaware
CoStar UK Limited	United Kingdom
Cozy Insurance Services, LLC	Florida
Cozy Services, LLC	Delaware
CSGP Holdings, LLC	Delaware
Grecam S.A.S.	France
Homes Media Solutions, LLC	Virginia
Homes.com, LLC	Delaware
Homesnap, LLC	Delaware
Immobilier Recherche Etudes Analyses Data	France
Property and Portfolio Research Ltd.	United Kingdom
STR Australia Pty Ltd.	Australia
STR Benchmarking Indonesia	Indonesia
STR Benchmarking Solutions (Beijing) Co., Ltd.	China
STR Colombia SAS	Colombia
STR Germany GmbH	Germany
STR Global Ltd.	United Kingdom
STR Global Singapore Private Limited	Singapore
STR Japan GK	Japan
STR, LLC	Delaware
Ten-X Finance, Inc.	Delaware
Ten-X, Inc.	Connecticut
Ten-X, LLC	Delaware
The Screening Pros, LLC	California
Thomas Daily GmbH	Germany

EXHIBIT 23.1

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

(1) Registration Statement Number 333-135709 on Form S-8 pertaining to the CoStar Group, Inc. Employee Stock Purchase Plan,
(2) Registration Statement Number 333-206929 on Form S-8 pertaining to the CoStar Group, Inc. Amended and Restated Employee Stock Purchase Plan,
(3) Registration Statement Number 333-143968 on Form S-8 pertaining to the CoStar Group, Inc. 2007 Stock Incentive Plan, as amended,
(4) Registration Statement Number 333-167424 on Form S-8 pertaining to the CoStar Group, Inc. 2007 Stock Incentive Plan, as amended,
(5) Registration Statement Number 333-182377 on Form S-8 pertaining to the CoStar Group, Inc. 2007 Stock Incentive Plan, as amended,
(6) Registration Statement Number 333-212278 on Form S-8 pertaining to the CoStar Group, Inc. 2016 Stock Incentive Plan,
(7) Registration Statement Number 333-223230 on Form S-8 pertaining to the CoStar Group, Inc. Management Stock Purchase Plan,
(8) Registration Statement Number 333-238500 on Form S-3 of CoStar Group, Inc., and
(9) Registration Statement Number 333-258220 on Form S-8 of CoStar Group, Inc. pertaining to the Second Amended and Restated Employee Stock Purchase Plan.

of our reports dated February 22, 2023, with respect to the consolidated financial statements of CoStar Group, Inc. and the effectiveness of internal control over financial reporting of CoStar Group, Inc. included in this Annual Report (Form 10-K) of CoStar Group, Inc. for the year ended December 31, 2022.

/s/ Ernst & Young LLP

Tysons, Virginia
February 22, 2023

EXHIBIT 31.1

CERTIFICATION

I, Andrew C. Florance, certify that:

1. I have reviewed this annual report on Form 10-K of CoStar Group, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 22, 2023

By: /s/ Andrew C. Florance
Andrew C. Florance
President and Chief Executive Officer
(Principal Executive Officer and Duly Authorized Officer)

EXHIBIT 31.2

CERTIFICATION

I, Scott T. Wheeler certify that:

1. I have reviewed this annual report on Form 10-K of CoStar Group, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 22, 2023

By: /s/ Scott T. Wheeler
Scott T. Wheeler
Chief Financial Officer
(Principal Financial and Accounting Officer and Duly Authorized Officer)

EXHIBIT 32.1

CoStar Group, Inc.
1331 L Street, NW
Washington, DC 20005

February 22, 2023

Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549

Re: **Certification Of Principal Executive Officer Pursuant To 18 U.S.C. Sec. 1350**

Dear Ladies and Gentlemen:

In connection with the accompanying Annual Report on Form 10-K of CoStar Group, Inc., for the year ended December 31, 2022, I, Andrew C. Florance, Chief Executive Officer of CoStar Group, Inc., hereby certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

1) such Annual Report on Form 10-K of CoStar Group, Inc., for the year ended December 31, 2022, fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m or 78o (d)); and

2) the information contained in such Annual Report on Form 10-K of CoStar Group, Inc., for the year ended December 31, 2022, fairly presents, in all material respects, the financial condition and results of operations of CoStar Group, Inc.

By: /s/ Andrew C. Florance
Andrew C. Florance
President and Chief Executive Officer
(Principal Executive Officer and Duly Authorized Officer)

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to CoStar Group, Inc. and will be retained by CoStar Group, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.

In accordance with Item 601 of Regulation S-K, this certification is being “furnished” as Exhibit 32.1 to CoStar Group, Inc.’s annual report and shall not be deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934 (the “Exchange Act”) or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933 or the Exchange Act, except as expressly set forth by specific reference in such a filing.

EXHIBIT 32.2

CoStar Group, Inc.
1331 L Street, NW
Washington, DC 20005

February 22, 2023

Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549

Re: **Certification Of Principal Financial Officer Pursuant To 18 U.S.C. Sec. 1350**

Dear Ladies and Gentlemen:

In connection with the accompanying Annual Report on Form 10-K of CoStar Group, Inc., for the year ended December 31, 2022, I, Scott T. Wheeler, Chief Financial Officer of CoStar Group, Inc., hereby certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

1) such Annual Report on Form 10-K of CoStar Group, Inc., for the year ended December 31, 2022, fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m or 78o (d)); and

2) the information contained in such Annual Report on Form 10-K of CoStar Group, Inc., for the year ended December 31, 2022, fairly presents, in all material respects, the financial condition and results of operations of CoStar Group, Inc.

By: /s/ Scott T. Wheeler
Scott T. Wheeler
Chief Financial Officer
(Principal Financial and Accounting Officer and Duly Authorized Officer)

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to CoStar Group, Inc. and will be retained by CoStar Group, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.

In accordance with Item 601 of Regulation S-K, this certification is being “furnished” as Exhibit 32.2 to CoStar Group, Inc.’s annual report and shall not be deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934 (the “Exchange Act”) or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933 or the Exchange Act, except as expressly set forth by specific reference in such a filing.