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DELTA REPORT

10-K

GOOG - ALPHABET INC.

10-K - DECEMBER 31, 2021 COMPARED TO 10-K - DECEMBER 31, 2020

The following comparison report has been automatically generated

TOTAL DELTAS 4450

■ CHANGES 344

■ DELETIONS 1639

■ ADDITIONS 2467

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

FORM 10-K

(Mark One)

☐

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

For the fiscal year ended **December 31, 2020** **December 31, 2021**

OR

☐

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

For the transition period from _____ to _____.

Commission file number: **001-37580**

Alphabet Inc.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization)

61-1767919

(I.R.S. Employer Identification No.)

**1600 Amphitheatre Parkway
Mountain View, CA 94043**

(Address of principal executive offices, including zip code)

(650) 253-0000

(Registrant's telephone number, including area code)

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

<u>Title of each class</u>	<u>Trading Symbol(s)</u>	<u>Name of each exchange on which registered</u>
Class A Common Stock, \$0.001 par value	GOOGL	Nasdaq Stock Market LLC (Nasdaq Global Select Market)
Class C Capital Stock, \$0.001 par value	GOOG	Nasdaq Stock Market LLC (Nasdaq Global Select Market)

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

Title of each class

None

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

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

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☐ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (\$232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☐ No ☐

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

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
Emerging growth company	<input type="checkbox"/>		

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

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C.7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☐

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

As of **June 30, 2020** **June 30, 2021**, the aggregate market value of shares held by non-affiliates of the registrant (based upon the closing sale prices of such shares on the Nasdaq Global Select Market on **June 30, 2020** **June 30, 2021**) was approximately **\$849.7 billion** **\$1,451.1 billion**. For purposes of calculating the aggregate market value of shares held by non-affiliates, we have assumed that all outstanding shares are held by non-affiliates, except for shares held by each of our executive officers, directors and 5% or greater stockholders. In the case of 5% or greater stockholders, we have not deemed such stockholders to be affiliates unless there are facts and circumstances which would indicate that such stockholders exercise any control over our company, or unless they hold 10% or more of our outstanding common stock. These assumptions should not be deemed to constitute an admission that all executive officers, directors and 5% or greater stockholders are, in fact, affiliates of our company, or that there are not other persons who may be deemed to be affiliates of our company. Further information concerning shareholdings of our officers, directors and principal stockholders is included or incorporated by reference in Part III, Item 12 of this Annual Report on Form 10-K.

As of **January 26, 2021** **January 25, 2022**, there were **300,737,081** **300,754,904** shares of the registrant's Class A common stock outstanding, **45,843,112** **44,576,938** shares of the registrant's Class B common stock outstanding, and **327,556,472** **315,639,479** shares of the registrant's Class C capital stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for the **2021** **2022** Annual Meeting of Stockholders are incorporated herein by reference in Part III of this Annual Report on Form 10-K to the extent stated herein. Such proxy statement will be filed with the Securities and Exchange Commission within 120 days of the registrant's fiscal year ended **December 31, 2020** **December 31, 2021**.

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Form 10-K
For the Fiscal Year Ended **December 31, 2020** **December 31, 2021**

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NOTE ABOUT FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These statements include, among other things, statements regarding:

- the ongoing effect of the novel coronavirus pandemic ("COVID-19"), including its macroeconomic effects on our business, operations, and financial results; and the effect of governmental lockdowns, restrictions and new regulations on our operations and processes;
- the growth of our business and revenues and our expectations about the factors that influence our success and trends in our business, including the size and timing of the expected return on our continuing investments in our Google Cloud segment; business;
- the potential for declines fluctuations in our revenue growth rate and operating margin; margin and various factors contributing to such fluctuations;
- our expectation that the continuing shift from an offline to online world will continue to benefit our business;
- our expectation that the portion of our revenues that we derive from non-advertising revenues will continue to increase and may affect our margins;
- our expectation that our traffic acquisition costs ("TAC") (TAC) and the associated TAC rate will fluctuate, which could affect our overall margins;
- our expectation that our monetization trends will fluctuate, which could affect our revenues and margins;

- fluctuations in our revenue growth, as well as the change in paid clicks and cost-per-click and the change in impressions and cost-per-impression, and various factors contributing to such fluctuations;
- our expectation that we will continue to periodically review, refine, and update our methodologies for monitoring, gathering, and counting the number of paid clicks and impressions;
- our expectation that our results will be affected by our performance in international markets as users in developing economies increasingly come online;
- our expectation that our foreign exchange risk management program will not fully offset our net exposure to fluctuations in foreign currency exchange rates;
- the expected variability of gains and losses related to hedging activities under our foreign exchange risk management program;
- the amount and timing of revenue recognition from customer contracts with commitments for performance obligations, including our estimate of the remaining amount of commitments and when we expect to recognize revenue;
- fluctuations in our capital expenditures;
- our plans to continue to invest in new businesses, products, services and technologies, systems, land and buildings for data centers and offices, and infrastructure, as well as to continue to invest in **acquisitions; acquisitions and strategic investments;**
- our pace of hiring and our plans to provide competitive compensation programs;
- our expectation that our cost of revenues, research and development ("**R&D**") (**R&D**) expenses, sales and marketing expenses, and general and administrative expenses may increase in amount and/or may increase as a percentage of revenues and may be affected by a number of factors;
- estimates of our future compensation expenses;
- our expectation that our other income (expense), net ("**OI&E**") (**OI&E**), will fluctuate in the future, as it is largely driven by market dynamics;
- fluctuations in our effective tax rate;
- seasonal fluctuations in internet usage and advertiser expenditures, underlying business trends such as traditional retail seasonality, **(including developments and volatility arising from COVID-19)**, which are likely to cause fluctuations in our quarterly results;
- the sufficiency of our sources of funding;
- our potential exposure in connection with new and pending investigations, proceedings, and other contingencies;

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- the sufficiency and timing of our proposed remedies in response to decisions from the European Commission ("**EC**") (**EC**) and other regulators and governmental entities;
- our expectations regarding the timing, design, and **ongoing phased** implementation of our new global enterprise resource planning ("**ERP**") (**ERP**) system;
- the expected timing, **amount**, and **amount effect** of Alphabet Inc.'s share repurchases;
- our long-term sustainability and diversity goals;
- **our expectation that the estimated useful life of servers and certain network equipment will have a favorable effect on our 2021 operating results;**

as well as other statements regarding our future operations, financial condition and prospects, and business strategies. Forward-looking statements may appear throughout this report and other documents we file with the Securities and Exchange Commission ("**SEC**") (**SEC**), including without limitation, the following sections: **Part I, Item 1 "Business," "Business," Part I, Item 1A "Risk Factors, Factors,"** and **Part II, Item 7 "Management's Discussion and Analysis of Financial Condition and Results of Operations."** Forward-looking statements generally can be identified by words such as "anticipates," "believes," "estimates," "expects," "intends," "plans," "predicts," "projects," "will be," "will continue," "may," "could," "will likely result," and similar expressions. These forward-looking statements are based on current expectations and assumptions that are subject to risks and uncertainties, which could cause our actual results to differ materially from those reflected in the forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in this Annual Report on Form 10-K, and in particular, the risks discussed in **Part I, Item 1A, "Risk Factors"** of this report and those discussed in other documents we file with the SEC. We undertake no obligation to revise or publicly release the results of any revision to these forward-looking statements, except as required by law. Given these risks and uncertainties, readers are cautioned not to place undue reliance on such forward-looking statements.

As used herein, "Alphabet," "the company," "we," "us," "our," and similar terms include Alphabet Inc. and its subsidiaries, unless the context indicates otherwise.

"Alphabet," "Google," and other trademarks of ours appearing in this report are our property. This report contains additional trade names and trademarks of other companies. We do not intend our use or display of other companies' trade names or trademarks to imply an endorsement or sponsorship of us by such companies, or any relationship with any of these companies.

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PART I

ITEM 1. BUSINESS

Overview

As our founders Larry and Sergey wrote in the original founders' letter, "Google is not a conventional company. We do not intend to become one." That unconventional spirit has been a driving force throughout our history, inspiring us to tackle big problems and invest in moonshots like artificial intelligence ("AI") (AI) research and quantum computing. We continue this work under the leadership of Sundar Pichai, who has served as CEO of Google since 2015 and as CEO of Alphabet since 2019.

Alphabet is a collection of businesses — the largest of which is Google. We report Google — which we report as in two segments; segments, Google Services and Google Cloud. We Cloud; we also report all non-Google businesses collectively as Other Bets. Our Other Bets include earlier stage technologies that are further afield from our core Google business. We take a long term long-term view and manage the portfolio of Other Bets with the discipline and rigor needed to deliver long-term returns. Our Alphabet Alphabet's structure is about helping each of our businesses prosper through strong leaders and independence.

Access and technology for everyone

The Internet is one of the world's most powerful equalizers, capable of propelling new equalizers; it propels ideas, people and people forward, businesses large and small. Our mission to organize the world's information and make it universally accessible and useful is as relevant today as it was when we were founded in 1998. Since then, we've we have evolved from a company that helps people find answers to a company that also helps you people get things done. We're

We are focused on building an even more helpful Google for everyone, and we aspire to give everyone the tools they need to increase their knowledge, health, happiness, and success.

Across Alphabet, we're focused on continually innovating in areas where technology can have an impact on people's lives. Every year, there are trillions of searches on Google, and 15% of the searches we see every day are new. We continue to invest deeply in AI and other technologies to ensure the most helpful Search search experience possible. People come to YouTube for provides people with entertainment, information, and opportunities to learn something new. And Google Assistant offers the best way to get things done seamlessly across different devices, providing intelligent help throughout your a person's day, no matter where you they are.

Since We are continually innovating and building new product features that will help our users, partners, customers, and communities. We have invested more than \$100 billion in R&D over the last five years. In addition, with the onset of

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the pandemic, began, our teams we have built new focused in particular on features to that help users go about people in their daily lives and to that support businesses working to serve their customers customers. For example, we have added live busyness trends in Google Maps that help users instantly spot when a neighborhood or part of town is near or at its busiest. We have also helped businesses navigate uncertainty during an uncertain time. In conjunction with Apple, uneven economic recovery, and we launched Exposure Notification apps that are being used by local governments globally. Our have worked to address the complex challenge of distributing critical information about COVID-19 Community Mobility Reports are used by public health agencies and researchers vaccines to billions of people around the globe, and we've committed hundreds of millions of dollars to help small businesses through a combination of small business loans, grants and ad credits. world. Importantly, we've we have made authoritative content a key focus area across both Google Search and YouTube to help users search for find trusted public health information.

Our Other Bets are also pursuing initiatives with similar goals, remain focused on innovation through technology that can positively affect people's lives. For instance, as a part of our efforts in the Metro Phoenix area, Waymo is working toward our goal of making transportation safer and easier for everyone while and Verily is developing tools and platforms to improve health outcomes.

Moonshots

Many companies get comfortable doing what they have always done, making only incremental changes. This incrementalism leads to irrelevance over time, especially in technology, where change tends to be revolutionary, not evolutionary. People thought we were crazy when we acquired YouTube and Android and when we launched Chrome, but those efforts have matured into major platforms for digital video and mobile devices and a safer, popular browser. We continue to look toward the future and continue to invest for the long-term. long term within each of our segments. As we said in the original founders' letter, we will not shy away from high-risk, high-reward projects that we believe in, because as they are the key to our long-term success.

The power of machine learning AI

Across the company, investments in AI and machine learning and AI are increasingly driving many of our latest innovations. Our investments in machine learning over the past decade innovations and have enabled us to build products that are smarter and more helpful. For example, a huge breakthrough in May of 2021, we introduced Multitask Unified Model — or MUM — which has the potential to transform how Google helps with complex tasks. MUM is trained across 75 different languages, which means that it can learn from sources written in one language and help bring that information to people in another. It is also multimodal, so it understands information across text and images and, in the future, can expand to more modalities like video and audio. We are currently experimenting with MUM's capabilities to make searching more natural language understanding, called BERT, now improves results for almost every English language search query, and intuitive and even enable entirely new ways to search.

DeepMind also made a significant AI-powered breakthrough, solving a 50-year-old protein folding challenge, which will help us the world better understand one of life's fundamental building blocks, and will enable researchers to tackle new and difficult problems, from fighting diseases to environmental sustainability.

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DeepMind has since shared its new AlphaFold protein structure database, which doubled the number of high-accuracy human protein structures available to researchers.

Google

For reporting purposes, Google comprises two segments: Google Services and Google Cloud.

Google Services

Serving our users

We have always been a company committed to building helpful products that can improve the lives of millions of people. Our product innovations have made our services widely used, and our brand one of the most recognized in the world. Google Services' core products and platforms include ads, Android, Chrome, hardware, Gmail, Google Drive, Google Maps, Google Photos, Google Play, Search, and YouTube, each with broad and growing adoption by users around the world.

Our products and services have come a long way since the company was founded more than two decades ago. Rather than the ten blue links in our early search results, users can now get direct answers to their questions using their computer, mobile device, or their own voice, making it quicker, easier and more natural to find what you're they are looking for.

This drive to make information more accessible and helpful has led us over the years to improve the discovery and creation of digital content both on the web and through platforms like Google Play and YouTube. With the migration to continued adoption of mobile, people are consuming more digital content by watching more videos, playing more games, listening to more music, reading more books, and using more apps than ever before. Working with content creators and partners, we continue to build new ways for people around the world to find great digital content.

Fueling all of these great digital experiences are powerful extraordinary platforms and hardware. That's That is why we continue to invest in platforms like our Android mobile operating system, Chrome browser, and Chrome operating system, as

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well as growing our family of great hardware devices. We see tremendous potential for devices to be helpful and make your life people's lives easier and get better over time, by combining the best of our AI, software and hardware. This potential is reflected in our latest generation of hardware products like such as Pixel 4a, Pixel 4a 5G and Pixel 6 phones, the Fitbit Charge 5, phones, Chromecast with Google TV, and the new Google Nest Hub smart display, Cams and Nest Doorbell. Creating beautiful products that people rely on every day is a journey that we are investing in for the long run.

Key The key to building helpful products for users is our commitment to privacy, security, and user choice. We protect user privacy and security with products that are secure by default and private by design, and that keep users in control of their data. Our privacy-preserving technologies safeguard individual privacy and enhance data protection. As the Internet evolves, we so does our approach to privacy and security. We continue to invest in keeping data safe, including enhanced malware enhance our anti-malware features in Chrome and drive improvements to such as auto-delete controls that will automatically delete web and app searches after 18 months. And we continue to keep users and their passwords safe through advances like our built-in password manager.

How we make money

Our We have built world-class advertising products deliver relevant ads at just the right time, technologies for advertisers, agencies, and publishers to give people useful commercial information, regardless of the device they're using. We also provide advertisers with tools that help them better attribute and measure power their advertising campaigns, digital marketing businesses. Our advertising solutions help millions of companies grow their businesses and we offer a through our wide range of products across devices and formats, formats, and we aim to ensure positive user experiences by serving the right ads at the right time and by building deep partnerships with brands and agencies.

Google Services generates revenues primarily by delivering both performance and brand advertising that appears on Google Search & other properties, YouTube and Google Network partners' properties ("Google Network properties"). We continue to invest in both performance and brand advertising and brand advertising, seek to improve the measurability of advertising so advertisers understand the effectiveness of their campaigns.

- **Performance advertising** creates and delivers relevant ads that users will click on, leading to direct engagement with advertisers. Most of our performance advertisers pay us when a user engages in their ads. Performance advertising lets our advertisers connect with users while driving measurable results. Our ads tools allow performance advertisers to create simple text-based ads that appear on Google Search & other properties, YouTube and the properties of Google Network Members. In addition, Google Network Members use our platforms to display relevant ads on their properties, generating revenues when site visitors view or click on the ads. We continue to invest in our advertising programs and make significant upgrades.
- **Brand advertising** helps enhance users' awareness of and affinity with for advertisers' products and services, through videos, text, images, and other interactive ads that run across various devices. We help brand advertisers deliver digital videos and other types of ads to specific audiences for their brand-building marketing campaigns.

We have built a world-class ad technology platform for advertisers, agencies, and publishers to power their digital marketing businesses. We aim to ensure great user experiences by serving the right ads at the right time and by building deep partnerships with brands and agencies. We also seek to improve the measurability of advertising so advertisers know when their campaigns are effective.

We have allocated substantial resources to stopping bad advertising practices and protecting users on the web. We focus on creating the best advertising experiences for our users and advertisers in many ways, ranging

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from including filtering out invalid traffic, removing billions of bad ads from our systems every year, to and closely monitoring the sites, apps, and videos where ads appear and blocklisting them when necessary to ensure that ads do not fund bad content.

We continue to look to the future and are making long-term investments that will we expect to grow revenues beyond advertising, including revenues from Google Play, hardware, and YouTube. We are also investing YouTube non-advertising.

- **Google Play** generates revenues from sales of apps and in-app purchases and digital content sold in research efforts in AI the Google Play store.
- **Hardware** generates revenues from sales of Fitbit wearable devices, Google Nest home products, Pixel phones, and quantum computing to foster innovation across our businesses other devices.
- **YouTube non-advertising** generates revenues from YouTube Premium and create new opportunities. YouTube TV subscriptions and other services.

Google Cloud

Google was a company built in the cloud. We continue to invest in infrastructure, security, data management, analytics, and AI. We see significant opportunity in helping businesses utilize these strengths with features like data migration, modern development environments, and machine learning tools to provide enterprise-ready cloud services, including Google Cloud Platform and Google Workspace (formerly known as G Suite). Workspace. Google Cloud Platform enables developers to build, test, and deploy applications on its highly scalable and reliable infrastructure. Our Google Workspace collaboration tools — which include apps like Gmail, Docs, Drive, Calendar, Meet and more — are designed with real-time collaboration and machine intelligence to help people work smarter. Because more and more of today's great digital experiences are being built in the cloud, our Google Cloud products help businesses of all sizes take advantage of the latest technology advances to operate more efficiently.

Google Cloud generates revenues primarily from fees received for Google Cloud Platform generates revenues from infrastructure, platform and other services.

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- **Google Workspace** generates revenues from cloud-based collaboration tools for enterprises, such as Gmail, Docs, Drive, Calendar and Meet.

Our cloud services are generally provided on either a consumption or subscription basis and Google Workspace collaboration tools may have contract terms longer than a year.

Other Bets

Throughout Across Alphabet, we are also using technology to try and to solve big problems across many that affect a wide variety of industries. Alphabet's investment in our the portfolio of Other Bets include includes emerging businesses at various stages of development, ranging from those in the research and development R&D phase to those that are in the beginning stages of commercialization, and our goal is for them to become thriving, successful businesses in the medium to long term. While these early-stage businesses naturally come with considerable uncertainty, some of them are already generating revenue and making important strides in their industries. Revenues from Other Bets are generated primarily generated from internet the sale of health technology and TV services, as well as licensing and R&D internet services.

Other Bets operate as independent companies and some of them have their own boards with independent members and outside investors. We are investing in our the portfolio of Other Bets and being very deliberate about the focus, scale, and pace of investments.

Competition

Our business is characterized by rapid change as well as new and disruptive technologies. We face formidable competition in every aspect of our business, particularly from companies that seek to connect people with online information and provide them with relevant advertising. We face competition including from:

- General purpose search engines and information services, such as Baidu, Microsoft's Bing, Naver, Seznam, Verizon's Yahoo, and Yandex.
- Vertical search engines and e-commerce websites, providers, such as Amazon and eBay (e-commerce), Booking's Kayak (travel queries), Microsoft's LinkedIn (job queries), and WebMD (health queries). Some users will navigate directly to such content, websites, and apps rather than go through Google.
- Social networks such as Facebook, Snapchat, offered by ByteDance, Meta, Snap, and Twitter. Some users increasingly rely on social networks for product or service referrals, rather than seeking information through traditional search engines.
- Other online advertising platforms and networks, such as Amazon, AppNexus, Criteo, and Meta, that compete for advertisers that use Google Ads, our primary auction-based advertising platform.
- Other forms of advertising, such as billboards, magazines, newspapers, radio, and television. Our advertisers typically advertise in multiple media, both online and offline.
- Other online advertising Companies that design, manufacture, and market consumer hardware products, including businesses that have developed proprietary platforms, such as Amazon, Apple, and networks, including Microsoft.
- Digital assistant providers, such as Amazon AppNexus, Criteo, and Facebook, that compete for advertisers that use Google Ads, our primary auction-based advertising platform, Apple.
- Providers of enterprise cloud services, such as Alibaba, Amazon, Microsoft, and Salesforce.
- Providers of digital video services, such as Amazon, Apple, AT&T, ByteDance, Disney, Facebook, Hulu, Netflix Meta, and TikTok. Netflix.

In businesses that are further afield from our advertising business, we compete with companies that have longer operating histories and more established relationships with customers and users. We face competition from:

- Other digital content and application platform providers, such as Amazon and Apple.

- Companies that design, manufacture, and market consumer hardware products, including businesses that have developed proprietary platforms.
- Providers of enterprise cloud services, including Alibaba, Amazon, workspace connectivity and Microsoft.
- Digital assistant providers, productivity products, such as Amazon Meta, Microsoft, Salesforce, and Apple, Zoom.

Competing successfully depends heavily on our ability to deliver develop and distribute innovative products and technologies to the marketplace across our businesses. Specifically, for advertising, competing successfully depends on attracting and retaining:

- Users, users, for whom other products and services are literally one click away, largely on the basis of the relevance of our advertising, as well as the general usefulness, security, and availability of our products and services, services;
- Advertisers, advertisers, primarily based on our ability to generate sales leads, and ultimately customers, and to deliver their advertisements in an efficient and effective manner across a variety of distribution channels, channels; and
- Content content providers, primarily based on the quality of our advertiser base, our ability to help these partners generate revenues from advertising, and the terms of our agreements with them.

For additional information about competition, see Risk Factors in Item 1A of this Annual Report on Form 10-K.

Ongoing Commitment to Sustainability

At We believe that every business has the opportunity and obligation to protect our planet. Sustainability is one of our core values at Google, and we build technology that helps people do more for the planet. We strive to build sustainability into everything we do, including designing do. We have been a leader on sustainability and operating efficient data centers, advancing carbon-free energy, creating sustainable workplaces, building better devices and services, empowering users with technology, and enabling a responsible supply chain.

Google has been carbon neutral climate change since 2007, and in 2019, for the third consecutive year, we matched 100% Google's founding over 20 years ago. These are some of our electricity consumption with renewable energy purchases. We are key achievements over the largest annual corporate purchaser of renewable energy in the world, based on renewable electricity purchased in megawatt-hour (MWh), past two decades:

- In 2020, we neutralized our entire legacy carbon footprint since our founding (covering all our operational emissions before 2007, we became carbon neutral in 2007), making Google the first major company to achieve be carbon neutrality neutral for its entire operating history. In our third decade of climate action, we've set our most ambitious goal yet: to run our business on carbon-free energy everywhere, at all times, by 2030, operations.

We're also investing in technologies to help our partners and people all over the world make sustainable choices. For example, we intend to enable 5 GW of new carbon-free energy across our key manufacturing regions by 2030 through investment. We anticipate this will spur more than \$5 billion in clean energy investments, avoid the amount of emissions equal to taking more than 1 million cars off the road each year, and create more than 8,000 clean energy jobs. With the Environmental Insights Explorer, we're also working to help more than 500 cities and local governments globally reduce a total of 1 gigaton of carbon emissions annually by 2030 — that's the equivalent of the annual carbon emissions of a country the size of Japan.

Google's products are already helping people make more sustainable choices in their daily lives, whether it's using Google Maps to find bike-shares and electric vehicle charging stations, or in many European countries, using Google Flights to sort the least carbon-intensive option flights. There are more tools and information we can provide, and our goal is to find new ways that our products can help 1 billion people make more sustainable choices by 2022.

Climate change is one of the most significant global challenges of our time. • In 2017, we developed a climate resilience strategy, became the first major company to match 100% of our annual electricity use with renewable energy, which included conducting a climate scenario analysis. We've earned a spot on the CDP (formerly the Carbon Disclosure Project) Climate Change A List we have achieved for seven four consecutive years. We believe our CDP climate change response reflects the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).

- In 2020, we issued \$5.75 billion in sustainability bonds, bonds—the largest sustainability or green bond issuance by any company in history, history at the time. The net proceeds from the issuance are used to fund environmentally and socially responsible projects in the following eight areas: energy efficiency, clean energy, green buildings, clean transportation, circular economy and design, affordable housing, commitment to racial equity, and support for small businesses and COVID-19 crisis response. As of December 31, 2020, we have allocated \$3.47 billion of the net proceeds, as outlined in our Sustainability Bond Impact Report published in 2021.
- Also in 2020, we compensated for our legacy carbon footprint, making Google the first major company to be carbon neutral for its entire operating history.

Our sustainability strategy is focused on three key pillars: accelerating the transition to carbon-free energy and a circular economy, empowering everyone with technology, and benefiting the people and places where we operate.

To accelerate the transition to a carbon-free economy, in 2020, we launched our third decade of climate action, and we are now working toward a new set of ambitious goals. By 2030, we aim to:

- achieve net-zero emissions across all of our operations and value chain;
- become the first major company to run on carbon-free energy 24 hours a day, seven days a week, 365 days a year;

- enable 5 gigawatts of new carbon-free energy through investments in our key manufacturing regions; and
- help more than 500 cities and local governments reduce an aggregate of 1 gigaton of carbon emissions annually.

To accelerate the transition to a circular economy, we are working to maximize the reuse of finite resources across our operations, products, and supply chains and to enable others to do the same. We are also working to empower everyone with technology by committing to help 1 billion people make more sustainable choices by the end of 2022 through our core products.

To benefit the people and places where we operate, we have set goals to replenish more water than we consume by 2030 and to support water security in communities where we operate. We will focus on three areas: enhancing our stewardship of water resources across Google office campuses and data centers; replenishing our water use and improving watershed health and ecosystems in water-stressed communities; and sharing technology and tools that help everyone predict, prevent, and recover from water stress.

We remain steadfast in our commitment to sustainability, and we will continue to lead and encourage others to join us in improving the health of our planet. We are proud of what we have achieved so far, and we are energized to help move the world closer to a more sustainable and carbon-free future for all.

More information on our approach to sustainability can be found in our annual sustainability reports, including Google's [environmental report](#). Environmental Report and Alphabet's 2021 Sustainability Bond Impact Report, which outlines the allocation of our net proceeds from our sustainability bonds. The [content](#) contents of our sustainability reports are not incorporated by reference into this Annual Report on Form 10-K or in any other report or document we file with the SEC. For additional information about risks and uncertainties applicable to our commitments to attain certain sustainability goals, see Risk Factors in Item 1A of this Annual Report on Form 10-K.

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Culture and Workforce

We're We are a company of curious, talented, and passionate people. We embrace collaboration and creativity, and encourage the iteration of ideas to address complex challenges in technology and society.

Our people are critical for our continued success. We success, so we work hard to provide create an environment where Googlers employees can have fulfilling careers, and be happy, healthy, and productive. We offer industry-leading benefits and programs to take care of the diverse needs of our employees and their families, including access to excellent healthcare choices, opportunities for career growth and

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development, and resources to support their financial health, health, and access to excellent healthcare choices. Our competitive compensation programs help us to attract and retain top candidates, and we will continue to invest in recruiting talented people to technical and non-technical roles, and rewarding them well. We provide a variety of high quality training and support to our managers to build and strengthen their capabilities—ranging from courses for new managers, to learning resources that help them provide feedback and manage performance, to coaching and individual support.

At Alphabet, is we are committed to making diversity, equity, and inclusion part of everything we do and we're committed to growing a workforce that's that is representative of the users we serve. More information on Google's approach to diversity can be found in our annual diversity reports, available publicly at [diversity.google](#). The [content](#) contents of our diversity reports is are not incorporated by reference into this Annual Report on Form 10-K or in any other report or document we file with the SEC.

As of December 31, 2021, Alphabet had 156,500 employees. We have work councils and statutory employee representation obligations in certain countries, and we are committed to supporting protected labor rights, maintaining an open culture and listening to all Googlers, employees. Supporting healthy and open dialogue is central to how we work, and we communicate information about the company through multiple internal channels to our employees. As of December 31, 2020, Alphabet had 135,301 employees.

When necessary, we contract with businesses around the world to provide specialized services where we don't do not have appropriate in-house expertise or resources, often in fields that require specialized training like cafe operations, content moderation, customer support, content moderation and physical security. We also contract with temporary staffing agencies when we need to cover short-term leaves, when we have spikes in business needs, or when we need to quickly incubate special projects. We choose our partners and staffing agencies carefully, and review their compliance with Google's Supplier Code of Conduct. We continually make improvements to promote a respectful and positive working environment for everyone — employees, vendors, and temporary staff alike.

Government Regulation

We are subject to numerous U.S. United States (U.S.) federal, state, and foreign laws and regulations covering a wide variety of subject matters. Like other companies in the technology industry, we face heightened scrutiny from both U.S. and foreign governments with respect to our compliance with laws and regulations. Many of these laws and regulations are evolving and their applicability and scope, as interpreted by the courts, remain uncertain.

Our compliance with these laws and regulations may be onerous and could, individually or in the aggregate, increase our cost of doing business, impact make our products and services less useful, limit our ability to pursue certain business models, cause us to change our business practices, affect our competitive position relative to our peers, and/or otherwise have an adverse impact effect on our business, reputation, financial condition, and operating results.

For additional information about government regulation applicable to our business, see Risk Factors in Part I, Item 1A, Trends in Our Business and Financial Effect in Part II, Item 7, and Legal Matters in Note 10 of the Notes to Consolidated Financial Statements included in Part II, Item 8 in of this Annual Report on Form 10-K.

Intellectual Property

We rely on various intellectual property laws, confidentiality procedures and contractual provisions to protect our proprietary technology and our brand. We have registered, and applied for the registration of, U.S. and international trademarks, service marks, domain names and copyrights. We have also filed patent applications in the U.S. and foreign

countries covering certain of our technology, and acquired patent assets to supplement our portfolio. We have licensed in the past, and expect that we may license in the future, certain of our rights to other parties. For additional information, see Risk Factors in Item 1A of this Annual Report on Form 10-K.

Seasonality

Our business is affected by seasonal fluctuations in internet usage, advertising expenditures, and underlying business trends such as traditional retail seasonality (including developments and volatility arising from COVID-19).

Available Information

Our website is located at www.abc.xyz, and our investor relations website is located at www.abc.xyz/investor. Our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and our Proxy Statements, and any amendments to these reports, are available through our investor relations website, free of charge, after we file them with the SEC. We also provide a link to the section of the SEC's website at www.sec.gov that has all of the reports that we file or furnish with the SEC.

We webcast via our investor relations website our earnings calls and certain events we participate in or host with members of the investment community. Our investor relations website also provides notifications of news or

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announcements regarding our financial performance and other items that may be material or of interest to our investors, including SEC filings, investor events, press and earnings releases, and blogs. We also share Google news and product updates on Google's Keyword blog at <https://www.blog.google/>, that may be material or of interest to our investors. Further, corporate governance information, including our certificate of incorporation, bylaws, governance

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guidelines, board committee charters, and code of conduct, is also available on our investor relations website under the heading "Other." The content contents of our websites are not incorporated by reference into this Annual Report on Form 10-K or in any other report or document we file with the SEC, and any references to our websites are intended to be inactive textual references only.

ITEM 1A. RISK FACTORS

Our operations and financial results are subject to various risks and uncertainties, including but not limited to those described below, which could harm our business, reputation, financial condition, and operating results, results, and affect the trading price of our Class A and Class C stock.

Risks Specific to our Company

We generate a significant portion of our revenues from advertising, and reduced spending by advertisers, a loss of partners, or new and existing technologies that block ads online and/or affect our ability to customize ads could harm our business.

We generated over generated more than 80% of of total revenues from the display of ads online in 2020, 2021. Many of our advertisers, companies that distribute our products and services, digital publishers, and content providers can terminate their contracts with us at any time. These partners may not continue to do business with us if we do not create more value (such as increased numbers of users or customers, new sales leads, increased brand awareness, or more effective monetization) than their available alternatives. Changes to our advertising policies and data privacy practices, as well as changes to other companies' advertising and/or data privacy practices have in the past, and may in the future, affect the advertising that we are able to provide, which could harm our business. In addition, technologies have been developed that make customized ads more difficult or that block the display of ads altogether and some providers of online services have integrated technologies that could potentially impair the availability and functionality of third-party digital advertising. Failing to provide superior value or deliver advertisements effectively and competitively could harm our reputation, financial condition, and operating results.

In addition, expenditures by advertisers tend to be cyclical, reflecting overall economic conditions and budgeting and buying patterns. Adverse macroeconomic conditions including COVID-19 have affected, and its effects on may in the global economy (as discussed in greater detail in our COVID-19 risk factor under 'General Risks' below), have impacted future affect, the demand for advertising, and resulted resulting in fluctuations in the amounts our advertisers spend on advertising, and could have an adverse impact on such demand and spend, which could harm our financial condition and operating results.

We face intense competition. If we do not continue to innovate and provide products and services that are useful to users, customers, and other partners, we may not remain competitive, which could harm our business and operating results.

Our business environment is rapidly evolving and intensely competitive. Our businesses face changing technologies, shifting user needs, and frequent introductions of rival products and services. To compete successfully, we must accurately anticipate technology developments and deliver innovative, relevant and useful products, services, and technologies in a timely manner. As our businesses evolve, the competitive pressure to innovate will encompass a wider range of products and services. We must continue to invest significant resources in research and development, R&D, including through acquisitions, in order to enhance our technology and new and existing products and services.

We have many competitors in different industries. Our current and potential domestic and international competitors range from large and established companies to emerging start-ups. Some competitors have longer operating histories and well established relationships in various sectors. They can use their experience and resources in ways that could affect our competitive position, including by making acquisitions, continuing to invest heavily in research and development R&D and in talent, aggressively initiating intellectual property claims (whether or not meritorious), and continuing to compete aggressively for users, advertisers, customers, and content providers. Further, discrepancies in enforcement of existing laws may enable our lesser known competitors to aggressively interpret those laws without commensurate scrutiny, thereby affording them competitive advantages. Our competitors may also be able to innovate and provide products and services faster than we can or may foresee the need for products and services before us.

Our operating results may also suffer if our products and services are not responsive to the needs of our users, advertisers, publishers, customers, and content providers. As technologies continue to develop, our competitors may be able to offer experiences that are, or that are seen to be, substantially similar to or better than ours. This

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may force us to compete in different ways and expend significant resources in order to remain competitive. If our competitors are more successful than we are in developing providing compelling products and services or in attracting and retaining users, advertisers, publishers, customers, and content providers, our operating results could be harmed.

Our ongoing investment in new businesses, products, services, and technologies is inherently risky, and could disrupt our current operations divert management attention and harm our financial condition and operating results.

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We have invested and expect to continue to invest in new businesses, products, services, and technologies. The investments that we are making across Google Services, Google Cloud, and Other Bets reflect our ongoing efforts to innovate and provide products and services that are useful to users, advertisers, publishers, customers, and content providers. Our investments in Google Services, Google Cloud, and Other Bets span a wide range of industries beyond online advertising. Such investments ultimately may not be commercially viable or may not result in an adequate return of capital and, in pursuing new strategies, we may incur unanticipated liabilities. These endeavors may involve significant risks and uncertainties, including diversion of resources and management resources attention from current operations and, with respect to Other Bets, the use of alternative investment, governance, or compensation structures that may fail to adequately align incentives across the company or otherwise accomplish their objectives.

Within Google Services, we continue to invest heavily in hardware, including our smartphones, and home devices, and wearables, which is a highly competitive market with frequent introduction of new products and services, rapid adoption of technological advancements by competitors, short product life cycles, evolving industry standards, continual improvement in product price and performance characteristics, and price and feature sensitivity on the part of consumers and businesses. There can be no assurance we will be able to provide hardware that competes effectively.

Within Google Cloud, we devote significant resources to develop and deploy our enterprise-ready cloud services, including Google Cloud Platform and Google Workspace. We are incurring costs to build and maintain infrastructure to support cloud computing services and hire talent, particularly to support and scale our salesforce. At the same time, our competitors are rapidly developing and deploying cloud-based services. Pricing and delivery models are competitive and evolving, and we may not attain sufficient scale and profitability to achieve our business objectives.

Within Other Bets, we are investing significantly in the areas of health, life sciences, and transportation, among others. These investment areas face intense competition from large, experienced, and well-funded competitors and our offerings may not be able to compete effectively or to operate at sufficient levels of profitability.

In addition, new and evolving products and services, including those that use artificial intelligence AI and machine learning, raise ethical, technological, legal, regulatory, and other challenges, which may negatively affect our brands and demand for our products and services. Because all of these new ventures are inherently risky, no assurance can be given that such strategies and offerings will be successful and will not harm our reputation, financial condition, and operating results.

Our revenue growth rate could decline over time, and we anticipate downward pressure on our operating margin in the future.

Our revenue growth rate could decline over time as a result of a number of factors, including increasing competition and the continued expansion of our business into a variety of new fields. competition. Changes in device mix, geographic mix, ongoing product and policy changes, product mix, and property mix and an increasing competition for advertising may also affect our advertising revenue growth rate. We may also experience a decline in our revenue growth rate as our revenues increase to higher levels, if there is a decrease in the rate of adoption of our products, services, and technologies, or due to deceleration or decline in demand for devices used to access our services, among other factors. In addition, COVID-19 and its effects on the global economy has impacted and may continue to adversely impact our revenue growth rate (as discussed in greater detail in our COVID-19 risk factor under 'General Risks' below).

In addition, to a decline in our revenue growth rate, we may also experience downward pressure on our operating margin resulting from a variety of factors, such as the continued expansion of our business into new fields, including products and services such as hardware, Google Cloud, and subscription products, as well as significant investments in Other Bets, all of which may have margins lower than those we generate from advertising. We may also experience downward pressure on our operating margins from increasing regulations, increasing competition, and increased costs for many aspects of our business, including within advertising where changes such as device mix, property mix, and partner agreements can affect margin. The margin we earn on revenues generated from our Google Network Members could also decrease in the future if we pay a larger percentage of advertising fees to them. We may also pay increased TAC to our distribution partners as well as increased content acquisition

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costs to content providers. We may also face an increase in infrastructure costs, supporting businesses such as Search, Google Cloud, and YouTube. Many of our expenses are less variable in nature and may not correlate to changes in revenues.

business. Due to these factors and the evolving nature of our business, our historical revenue growth rate and historical operating margin may not be indicative of our future performance. For additional information, see Trends in Our Business and Financial Effect in Part II, Item 7 of this Annual Report on Form 10-K.

Our intellectual property rights are valuable, and any inability to protect them could reduce the value of our products, services, and brands as well as affect our ability to compete.

Our patents, trademarks, trade secrets, copyrights, and other intellectual property rights are important assets for us. Various events outside of our control pose a threat to our intellectual property rights, as well as to our products, services, and technologies. For example, effective intellectual property protection may not be available in every country in which our products and services are distributed or made available through the Internet. Also, the efforts we have taken to protect our proprietary rights may not be sufficient or effective. Although we seek to obtain patent protection for our innovations, it is possible we may not be able to protect some of these innovations. Moreover, we may not have adequate patent or copyright protection for certain innovations that later turn out to be important. Furthermore, there is always the possibility despite our efforts, that the scope of the protection gained will be insufficient or that an issued patent may be deemed invalid or unenforceable.

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We also seek to maintain certain intellectual property as trade secrets. The secrecy of such trade secrets and other sensitive information could be compromised, which could cause us to lose the competitive advantage resulting from these trade secrets. We also face risks associated with our trademarks. For example, there is a risk that the word "Google" could become so commonly used that it becomes synonymous with the word "search." Some courts have ruled that "Google" is a protectable trademark, but it is possible that other courts, particularly those outside of the United States, U.S., may reach a different determination. If this happens, we could lose protection for this trademark, which could result in other people using the word "Google" to refer to their own products, thus diminishing our brand.

Any significant impairment of our intellectual property rights could harm our business and our ability to compete. Also, protecting our intellectual property rights is costly and time consuming. Any increase in the unauthorized use of our intellectual property could make it more expensive to do business and harm our operating results.

Our business depends on strong brands, and failing to maintain and enhance our brands would hurt our ability to expand our base of users, advertisers, customers, content providers, and other partners.

Our strong brands have significantly contributed to the success of our business. Maintaining and enhancing the brands within Google Services, Google Cloud, and Other Bets increases our ability to enter new categories and launch new and innovative products and services that better serve the needs of our users, advertisers, customers, content providers, and other partners. Our brands have been, and may in the future be, negatively affected by a number of factors, including, among others, reputational issues, third-party content shared on our platforms, data privacy and security issues and developments, and product or technical performance failures. For example, if we fail to respond appropriately to the sharing of misinformation or objectionable content on our services and/or products or objectionable practices by advertisers, or otherwise adequately address user concerns, our users may lose confidence in our brands.

Furthermore, failure to maintain and enhance equity in our brands may harm our business, financial condition, and operating results. Our success will depend largely on our ability to remain a technology leader and continue to provide high-quality, trustworthy, innovative products and services that are truly useful and play a valuable role in a range of settings.

We face a number of manufacturing and supply chain risks that if not properly managed, could harm our financial condition, operating results, and prospects.

We face a number of risks related to manufacturing and supply chain management, which could affect our ability to supply both our products and our internet-based services.

We rely on other companies to manufacture many of our finished products, products; to design certain of our components and parts, and parts; to participate in the distribution of our products and services, services; and to design, manufacture, or assemble certain components and parts in our technical infrastructure. Our business could be negatively affected if we are not able to engage these companies with the necessary capabilities or capacity on reasonable terms, or if those we engage fail to meet their obligations (whether due to financial difficulties or other reasons), or make adverse changes in the pricing or other material terms of our arrangements with them.

We have experienced and/or may in the future experience supply shortages and and/or price increases that could negatively affect our operations, driven by raw material, component or part availability, manufacturing capacity, labor shortages, industry allocations, logistics capacity, tariffs, trade disputes

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and barriers, natural disasters or pandemics, (including COVID-19), the effects of climate change (such as sea level rise, drought, flooding, heat waves, wildfires and resultant air quality effects and power shutoffs associated with wildfire prevention, and increased storm severity), and significant changes in the financial or business condition of our suppliers. We have experienced and/or may in the future, experience shortages or other supply chain disruptions that could negatively affect our operations. In addition, some of the components we use in our technical infrastructure and products are available from only one or limited sources, and we may not be able to find replacement vendors on favorable terms in the event of a supply chain disruption. In addition, a significant supply interruption that affects us or our vendors could delay critical data center upgrades or expansions and delay product availability.

We may enter into long term long-term contracts for materials and products that commit us to significant terms and conditions. We may be liable for materials and products that are not consumed due to market acceptance, technological change, obsolescences, quality, product recalls, and warranty issues. For instance, because certain of our hardware supply contracts have volume-based pricing or minimum purchase requirements, if the volume of our hardware sales decreases or does not reach projected targets, we could face increased materials and manufacturing costs or other financial liabilities that could make our products more costly per unit to manufacture and negatively affect our financial results. Furthermore, certain of our competitors may negotiate more favorable contractual terms based on volume and other commitments that may provide them with competitive advantages and may affect our supply.

Our products and services have had, and in the future may have, quality issues resulting from design, manufacturing, or operations. Sometimes, these issues may be caused by components we purchase from other manufacturers or suppliers. If the quality of our products and services does not meet expectations or our products or services are defective, it could harm our reputation, financial condition, and operating results.

We require our suppliers and business partners to comply with laws and, where applicable, our company policies, such as the Google Supplier Code of Conduct, regarding workplace and employment practices, data security, environmental compliance, and intellectual property licensing, but we do not control them or their practices. Violations of law or unethical business practices could result in supply chain disruptions, canceled orders, harm to key relationships, and damage to our reputation. Their failure to procure necessary license rights to intellectual property could affect our ability to sell our products or services and expose us to litigation or financial claims.

Interruption to, interference with, or failure of our complex information technology and communications systems could hurt our ability to effectively provide our products and services, which could harm our reputation, financial condition, and operating results. In addition, complications problems with the design or implementation of our new global enterprise resource planning system could harm our business and operations.

The availability of our products and services and fulfillment of our customer contracts depend on the continuing operation of our information technology and communications systems. Our systems are vulnerable to damage, interference, or interruption from modifications or upgrades, terrorist attacks, natural disasters or pandemics, (including COVID-19), the effects of climate change (such as sea level rise, drought, flooding, heat waves, wildfires and resultant air quality effects and power shutoffs associated with wildfire prevention, and increased storm severity), power loss, telecommunications failures, computer viruses, ransomware attacks, computer denial of service attacks, phishing schemes, or other attempts to harm or access our systems. Some of our data centers are located in areas with a high risk of major earthquakes or other natural disasters. Our data centers are also subject to break-ins, sabotage, and intentional acts of vandalism, and, in some cases, to potential disruptions resulting from problems experienced by facility operators. Some of our systems are not fully redundant, and disaster recovery planning cannot account for all eventualities.

The occurrence of a natural disaster or pandemic, (including COVID-19), closure of a facility, or other unanticipated problems at, or impacting, affecting our data centers could result in lengthy interruptions in our service. In addition, our products and services are highly technical and complex and have contained in the past, and may contain in the future, errors or vulnerabilities, which could result in interruptions in or failure of our services or systems.

In addition, we rely extensively on information systems and technology to manage our business and summarize operating results. We are in the process of a multi-year implementation of a new ERP system, which will replace much of our existing core financial systems. The ERP system is designed to accurately maintain our financial records, enhance the flow of financial information, improve data management, and provide timely information to our management team. We As the phased implementation continues, we may not be able to successfully implement the ERP system without experiencing experience delays, increased costs, and other difficulties. Failure to successfully design and implement the new ERP system as planned could harm our business, financial condition, and operating results. Additionally, if we do not effectively implement the ERP system as planned or the ERP system does not operate as intended, the effectiveness of our internal control over financial reporting could be negatively affected.

Our international operations expose us to additional risks that could harm our business, our financial condition, and operating results.

Our international operations are significant to our revenues and net income, and we plan to continue to grow internationally. International revenues accounted for approximately 53% 54% of our consolidated revenues in 2020, 2021. In addition to risks described elsewhere in this section, our international operations expose us to other risks, including the following:

- Restrictions restrictions on foreign ownership and investments, and stringent foreign exchange controls that might prevent us from repatriating cash earned in countries outside the U.S.;
- Import import and export requirements, tariffs and other market access barriers that may prevent or impede us from offering products or providing services to a particular market, or that could limit our ability to source assemblies and finished products from a particular market, and may increase our operating costs, costs;
- Longer longer payment cycles in some countries, increased credit risk, and higher levels of payment fraud, fraud;
- Evolving an evolving foreign events, including the effect of the United Kingdom's withdrawal from the European Union, policy landscape that may adversely affect our revenues and could subject us to new regulatory costs and challenges (including the transfer of personal data between the EU and the United Kingdom and new customer requirements), in addition to other adverse effects that we are unable to effectively anticipate, anticipate;

- Anti-corruption anti-corruption laws, such as the U.S. Foreign Corrupt Practices Act, and other local laws prohibiting certain payments to government officials, violations of which could result in civil and criminal penalties, penalties;
- Uncertainty uncertainty regarding liability for services and content, including uncertainty as a result of local laws and lack of legal precedent, precedent; and
- Different different employee/employer relationships, existence of works councils and labor unions, and other challenges caused by distance, language, and cultural differences, making it harder to do business in certain jurisdictions.

Because we conduct business in currencies other than U.S. dollars but report our financial results in U.S. dollars, we have faced, and will continue to face, exposure to fluctuations in foreign currency exchange rates. Although we hedge a portion of our international currency exposure, significant fluctuations in exchange rates between the U.S.

dollar and foreign currencies may adversely affect our revenues and earnings, particularly in light of market volatilities due to COVID-19 earnings. Hedging programs are also inherently risky and could expose us to additional risks that could harm our financial condition and operating results.

Risks Related to our Industry

People access the Internet through a variety of platforms and devices that continue to evolve with the advancement of technology and user preferences. If manufacturers and users do not widely adopt versions of our products and services developed for these interfaces, our business could be harmed.

People access the Internet through a growing variety of devices such as desktop computers, mobile phones, smartphones, laptops and tablets, video game consoles, voice-activated speakers, wearables, automobiles, and television-streaming devices. Our products and services may be less popular on some interfaces. Each manufacturer or distributor may establish unique technical standards for its devices, and our products and services may not be available or may only be available with limited functionality for our users or our advertisers on these devices as a result. Some manufacturers may also elect not to include our products on their devices. In addition, search queries are increasingly being undertaken via voice-activated speakers, apps, social media or other platforms, which could harm our business. It is hard to predict the challenges we may encounter in adapting our products and services and developing competitive new products and services. We expect to continue to devote significant resources to creating and supporting products and services across multiple platforms and devices. Failing to attract and retain a substantial number of new device manufacturers, suppliers, distributors, developers, and users, or failing to develop products and technologies that work well on new devices and platforms, could harm our business, financial condition, and operating results and ability to capture future business opportunities.

Data privacy and security concerns relating to our technology and our practices could damage our reputation, cause us to incur significant liability, and deter current and potential users or customers from using our products and services. Software bugs or defects, security breaches, and attacks on our systems could result in the improper disclosure and use of user data and interference with our users' and customers' ability to use our products and services, harming our business operations and reputation.

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Concerns about, including the adequacy of, our practices with regard to the collection, use, governance, disclosure, or security of personal information or other data-privacy-related matters, even if unfounded, could harm our reputation, financial condition, and operating results. Our policies and practices may change over time as expectations and regulations regarding privacy and data change.

Our products and services involve the storage, handling, and transmission of proprietary and other sensitive information, and information. Software bugs, theft, misuse, defects, vulnerabilities in our products and services, and security breaches expose us to a risk of loss of this information, or improper use and disclosure of such information, which could result in litigation and other potential liability. liability, including regulatory fines and penalties, as well as reputational harm. Additionally, our products incorporate highly technical and complex technologies, and thus our technologies and software have contained, and are likely in the future to contain, undetected errors, bugs, or vulnerabilities. We have in the past discovered, and may in the future discover, some errors in our software code only after we have released the code. Systems and control failures, security breaches, failure to comply with our privacy policies, and/or inadvertent disclosure of user data could result in government and legal exposure, seriously harm our reputation, and brand, and therefore, our business, and impair our ability to attract and retain users or customers. We Such incidents have occurred in the past and may continue to occur due to the scale and nature of our products and services. While there is no guarantee that such incidents will not cause significant damage, we expect to continue to expend significant resources to maintain security protections that shield against limit the effect of bugs, theft, misuse, or and security vulnerabilities or breaches.

We experience cyber attacks and other attempts to gain unauthorized access to our systems on a regular basis. Cyber attacks continue to evolve in sophistication and volume, and inherently may be difficult to detect for long periods of time. We have seen, and will continue to see, industry-wide vulnerabilities, such as the Log4j vulnerability reported in December 2021, which could affect our or other parties' systems. We expect to continue to experience such

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incidents or vulnerabilities in the future. Our efforts to address undesirable activity on our platform may also increase the risk of retaliatory attack. We may experience future security issues, whether due to employee error or malfeasance or system errors or vulnerabilities in our or other parties' systems, which could systems. While we may not determine some of these issues to be material at the time they occur and may remedy them quickly, there is no guarantee that these issues will not ultimately result in significant legal, financial, and financial exposure. Government reputational harm, including government inquiries and enforcement actions, litigation, and adverse press coverage could harm our business. We negative publicity. Because the techniques used to obtain unauthorized access to, disable or degrade service provided by or otherwise sabotage systems change frequently and often are recognized only after being launched against a target, even taking all reasonable precautions, including those required by law, we have been unable in the past and may continue to be unable to anticipate or detect attacks or vulnerabilities or implement adequate preventative measures. Attacks

Further, if any partners with whom we share user or other customer information fail to implement adequate data-security practices or fail to comply with our terms and policies or otherwise suffer a network or other security issues breach, our users' information may be improperly accessed, used, or disclosed. If an actual or perceived breach of our or our business partners' or service providers' security occurs, the market perception of the effectiveness of our security measures would be harmed, we could also compromise lose users and customers, our trade secrets or those of our business partners may be compromised, and other sensitive information, harming we may be exposed to significant legal and financial risks, including legal claims (which may include class-action litigation) and regulatory action, fines, and penalties. Any of the foregoing consequences could have a material and adverse effect on our business, business, reputation, and results of operations.

While we have dedicated significant resources to privacy and security incident response capabilities, including dedicated worldwide incident response teams, our response process, particularly during times of a natural disaster or pandemic, (including COVID-19), may not be adequate, may fail to accurately assess the severity of an incident, may not respond quickly be fast enough to prevent or limit harm, or may fail to sufficiently remediate an incident. As a result, we may suffer significant legal, reputational, or financial exposure, which could harm our business, financial condition, and operating results.

For additional information, see also our risk factor on privacy and data protection regulations under 'Risks Related to Laws and Regulations' below.

Our ongoing investments in safety, security, and content review will likely continue to identify abuse of our platforms and misuse of user data.

In addition to our efforts to prevent and mitigate cyber attacks, we are making significant investments in safety, security, and content review efforts to combat misuse of our services and unauthorized access to user data by third parties, including investigations investigation and review of platform applications that could access the information of users of our services. As a result of these efforts, we could have in the past discovered, and may in the future discover, incidents of unnecessary access to or misuse of user data or other undesirable activity by third parties. We However, we may not have discovered, and may in the future not discover, all such incidents or activity, whether as a result of our data limitations, including our lack of visibility over our encrypted services, the scale of activity on our platform, or other factors, including factors outside of our control such as a natural disaster or pandemic, (including COVID-19), and we may be notified learn of such incidents or activity via third parties. Such incidents and activities may include the use of user data or our systems in a manner inconsistent with our terms, contracts or policies, the existence of false or undesirable user accounts, election interference, improper ad purchases, activities that threaten people's safety on- or offline, off-line, or instances of spamming, scraping, or spreading disinformation. While we may not determine some of these incidents to be material at the time they occurred and we may remedy them quickly, there is no guarantee that these issues will not ultimately result in significant legal, financial, and reputational harm, including government inquiries and enforcement actions, litigation, and negative publicity.

We may also be unsuccessful in our efforts to enforce our policies or otherwise prevent or remediate any such incidents. Any of the foregoing developments may negatively affect user trust and engagement, harm our reputation and brands, require us to change our business practices in a manner adverse to ways that harm our business operations and adversely affect our business and financial results. Any such developments may also subject us to additional litigation and regulatory inquiries, which could result in monetary penalties and damages, divert management's time and attention, and lead to enhanced regulatory oversight.

Problematic content on our platforms, including low-quality user-generated content, web spam, content farms, and other violations of our guidelines could affect the quality of our services, which could damage our reputation and deter our current and potential users from using our products and services.

We, like others in the industry, face violations of our content guidelines across our platforms, including sophisticated attempts by bad actors to manipulate our hosting and advertising systems to fraudulently generate revenues, or to otherwise generate traffic that does not represent genuine user interest or intent. While we invest significantly in efforts to promote high-quality and relevant results and to detect and prevent low-quality content and

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invalid traffic, we have been unable and may continue to be unable to adequately detect and prevent all such abuses or promote uniformly high-quality content, particularly during times of a natural disaster or pandemic (including COVID-19), content.

Many websites violate or attempt to violate our guidelines, including by seeking to inappropriately rank higher in search results than our search engine's assessment of their relevance and utility would rank them. Such efforts

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(known as "web spam") have affected, and may continue to affect, the quality of content on our platforms and lead them to display false, misleading, or undesirable content.

Although English-language web spam in our search results has been reduced, and web spam in most other languages is limited, we expect web spammers will continue to seek inappropriate ways to improve their rankings. We continuously combat web spam in our search results, including through indexing technology that makes it harder for spam-like, less useful web content to rank highly. We also continue to invest in and deploy proprietary technology to detect and prevent web spam from abusing on our platforms.

We also face other challenges from low-quality and irrelevant content websites, including content farms, which are websites that generate large quantities of low-quality content to help them improve their search rankings. We are continually launching algorithmic changes focused on detecting designed to detect and preventing prevent abuse from low-quality websites.

We also face other challenges on our platforms, including violations of our content guidelines involving incidents such as attempted election interference, activities that threaten the safety and/or well-being of our users on- or offline, off-line, and the spreading of disinformation, among other challenges, misinformation or disinformation.

If we fail to either detect and prevent an increase in problematic content or effectively promote high-quality content, it could hurt our reputation for delivering relevant information or reduce use of our platforms, harming our financial condition or operating results. It may also subject us to litigation and regulatory inquiries, action, which could result in monetary penalties and damages and divert management's time and attention, and lead to enhanced regulatory oversight, attention.

Our business depends on continued and unimpeded access to the Internet by us and our users. Internet access providers may be able to restrict, block, degrade, or charge for access to certain of our products and services, which could lead to additional expenses and the loss of users and advertisers.

Our products and services depend on the ability of our users to access the Internet, and certain of our products require significant bandwidth to work effectively. Currently, this access is provided by companies that have significant market power in the broadband and internet access marketplace, including incumbent telephone companies, cable companies, mobile communications companies, and government-owned service providers. Some of these providers have taken, or have stated that they may take measures that could degrade, disrupt, or increase the cost of user access to certain of our products by restricting or prohibiting the use of their infrastructure to support or facilitate our offerings, by charging increased fees to us or our users to provide our offerings, or by providing our competitors preferential access. Some jurisdictions have adopted regulations prohibiting certain forms of discrimination by internet access providers; however, substantial uncertainty exists in the United States U.S. and elsewhere regarding such protections. For example, in 2018 the United States U.S. Federal Communications Commission repealed net neutrality rules, which could permit internet access providers to restrict, block, degrade, or charge for access to certain of our products and services. In addition, in some jurisdictions, our products and services have been subject to government-initiated restrictions or blockages. COVID-19 has also resulted in quarantines, shelter in place orders, and work from home directives, all of which have increased demands for internet access and may create access challenges. These could result in a loss of harm existing key relationships, including with our users, customers, and advertisers, goodwill, and/or content providers, and increased costs, and could impair our ability to attract new users, customers ones; damage our reputation; and advertisers, increase costs, thereby harming negatively affecting our business.

Risks Related to Laws, Regulations, and Regulatory Policies

We face increased regulatory scrutiny as well as changes in regulatory conditions, laws, and policies governing a wide range of topics that may negatively affect our business.

We and other companies in the technology industry face increased regulatory scrutiny, enforcement action, and other proceedings. For instance, the U.S. Department of Justice, joined by a number of state Attorneys General, filed an antitrust complaint against Google on October 20, 2020, alleging that Google violated U.S. antitrust laws relating to Search and Search advertising. Separately, Similarly, on December 16, 2020, a number of state Attorneys General filed an antitrust complaint against Google in the United States U.S. District Court for the Eastern District of Texas, alleging that Google violated U.S. antitrust laws as well as state deceptive trade laws relating to its advertising technology. Various other regulatory agencies in the United States U.S. and around the world, including competition enforcers, consumer protection agencies, data protection authorities, grand juries, inter-agency consultative groups, and a range of other governmental bodies have and continue to review and in some cases challenge our products and services and their compliance with laws and regulations around the world. We continue to cooperate with these investigations, investigations and defend litigation where appropriate. Various laws, regulations, investigations, enforcement lawsuits, and regulatory actions have in the past, and may in the future, result in substantial fines and penalties, injunctive relief, ongoing auditing and monitoring

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obligations, changes to our products and services, alterations to our business models and operations, and collateral litigation, all of which could harm our business, reputation, financial condition, and operating results.

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Changes in international and local social, political, economic, tax, and regulatory conditions or in laws and policies governing a wide range of topics have in the past, and may in the future, increase our cost of doing business and limit our ability to pursue certain business models, offer products or services in certain jurisdictions, or cause us to change our business practices. We have in the past had to alter or withdraw stop offering certain products and services as a result of laws or regulations that made them unfeasible, and new laws or regulations such as the News Media Bargaining Code drafted by the Australian Competition and Consumer Commission currently tabled in parliament, could result in our having to terminate, alter, or withdraw products and services in the future. These additional Additional costs of doing business, new limitations, or changes to our business model or practices could harm our business, reputation, financial condition, and operating results.

We are subject to regulations, laws, and policies that govern a wide range of topics, including those related to matters beyond our core products and services. For instance, new regulations, laws, policies, and international accords relating to environmental and social matters, including sustainability, climate change, human capital, and diversity, are being developed and formalized in Europe, the U.S., and elsewhere, which may entail specific, target-driven frameworks and/or disclosure requirements. We have implemented robust environmental and social programs, adopted reporting frameworks and principles, and announced a number of goals and initiatives, including those related to environmental sustainability and diversity. The implementation of these goals and initiatives may require considerable investments, and our goals, with all of their contingencies, dependencies, and in certain cases, reliance on third-party verification and/or performance, are complex and ambitious, and we cannot guarantee that we will achieve them.

Additionally, there can be no assurance that our current programs, reporting frameworks, and principles will be in compliance with any new environmental and social laws and regulations that may be promulgated in the U.S. and elsewhere, and the costs of changing any of our current practices to comply with any new legal and regulatory requirements in the U.S. and elsewhere may be substantial. Furthermore, industry and market practices may further develop to become even more robust than what is required under any new laws and regulations, and we may have to expend significant efforts and resources to keep up with market trends and stay competitive among our peers.

A variety of new and existing laws and/or interpretations could harm our business.

We are subject to numerous U.S. and foreign laws and regulations covering a wide variety of subject matters. New laws and regulations, (or or new interpretations or applications of existing laws and regulations in a manner inconsistent with our practices) practices, have made, and may continue to make, our products and services less useful, limit our ability to pursue certain business models or offer certain products and services in certain jurisdictions, require us to incur substantial costs, expose us to civil or criminal liability, or cause us to change our business practices. These laws and regulations are evolving and involve matters central to our business, including, among others:

- New competition laws Laws and related regulations around the world that can focused on large technology platforms, including the Digital Markets Act in the European Union and proposed antitrust legislation on self-preferencing and mergers and acquisitions in the U.S., which may limit certain business practices, and in some cases, create the risk of significant penalties.
- Privacy laws, such as the California Consumer Privacy Act of 2018 that came into effect in January of 2020 GDPR, CCPA, CPRA, Virginia CDPA, and the California Privacy Rights Act which will go into effect in 2023, both of which give new data privacy rights to California residents, ColoPA (as defined and SB-327 in California, which regulates the security of data in connection with internet connected devices, discussed further below).
- Data protection laws passed by many states within the U.S. and by certain countries regarding notification to data subjects and/or regulators when there is a security breach of personal data.
- Consumer protection laws, including EU's New Deal for Consumers, which could result in monetary penalties and create a range of new compliance obligations.
- New laws further restricting the collection, processing and/or sharing of advertising-related data.
- Copyright or similar laws around the world, including the EU Directive on Copyright in the Digital Single Market (EUCD) of April 17, 2019, which and EU Member States must implement by June 7, 2021; and the News Media Bargaining Code drafted by the Australian Competition and Consumer Commission, member state transpositions. These and similar laws that have been adopted or proposed introduce new constraining licensing regimes that could affect our ability to operate. The EUCD and similar laws could

also increase the liability of some content-sharing services with respect to content uploaded by their users. Some of these laws, as well as follow-on administrative or judicial actions, have also created or may create a new property right in news publications that limits the ability of some online services to link to, interact with, or present such content. They may also impose require individual or collective compensation negotiations with news agencies and publishers for the use of such content, which may result in payment obligations that significantly exceed the value that such content provides to Google and its users, users, potentially harming our services, commercial operations, and business results.

- Data localization laws, which generally mandate that certain types of data collected in a particular country be stored and/or processed within that country.

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- Various U.S. and international laws that govern the distribution of certain materials to children and regulate the ability of online services to collect information from minors, minors, including the Children's Online Privacy Protection Act of 1998 and the United Kingdom's Age-Appropriate Design Code.
- Various laws with regard to content moderation and removal, and related disclosure obligations, such as the Network Enforcement Act in Germany and the European Union's pending Digital Services Act, which may affect our businesses and operations and may subject us to significant fines if such laws are interpreted and applied in a manner inconsistent with our practices or when we may not proactively discover such content due to the scale of third-party content and the limitations of existing technologies. Other countries, including Singapore, Australia, and the United Kingdom, have implemented or are considering similar legislation imposing penalties for failure to remove certain types of content.
- Various legislative, litigation, and regulatory activity regarding our Google Play billing policies and business model, which could result in monetary penalties, damages and/or prohibition.
- Various legislative and regulatory activity requiring disclosure of information about the operation of our services and algorithms, which may make it easier for websites to artificially promote low-quality, deceptive, or harmful content on services like Google Search and YouTube, potentially harming the quality of our services.

In addition, the applicability and scope of these laws, as interpreted by the courts, remain uncertain and could harm our business. For example:

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- We rely on statutory safe harbors, as set forth in the Digital Millennium Copyright Act and Section 230 of the Communications Decency Act in the United States U.S. and the E-Commerce Directive in Europe, against liability for various linking, caching, and hosting activities. Any legislation or court rulings affecting these safe harbors may adversely affect us. There are legislative proposals in both the US U.S. and EU that could reduce our safe harbor protection.
- Court decisions such as the judgment of the Court of Justice of the European Union (CJEU) on May 13, 2014 on the 'right to be forgotten,' which allows individuals to demand that Google remove search results about them in certain instances, may limit the content we can show to our users and impose significant operational burdens.

The introduction of new businesses, products, services, and technologies, our activities in certain jurisdictions, or other actions we take may have subjected us, and will likely continue to subject us, to additional laws and regulations. Our investment in a variety of new fields, such as healthcare and payment services, may has expanded, and will continue to expand, the scope of regulations that apply to our business. The costs of compliance with these laws and regulations are high and are likely to increase in the future. Any failure on our part to comply with laws and regulations can result in negative publicity and diversion of management time and effort and may subject us to significant liabilities and other penalties.

We are subject to claims, suits, government investigations, and other proceedings, and consent decrees that may harm our business, financial condition, and operating results.

We are subject to claims, suits, and government investigations, other proceedings, and consent decrees involving competition, intellectual property, data privacy and security, consumer protection, tax, labor and employment, commercial disputes, content generated by our users, goods and services offered by advertisers or publishers using our platforms, and other matters. Due to our manufacturing and sale of an expanded suite of products and services, including hardware as well as Google Cloud offerings, we also are subject to a variety of claims including product warranty, product liability, and consumer protection claims related to product defects, among other litigation. We may also be subject to claims involving health and safety, hazardous materials usage, other environmental impacts, effects, or service disruptions or failures.

Any of these types of legal proceedings can have an adverse effect on us because of legal costs, diversion of management resources, negative publicity and other factors. Determining reserves for our pending litigation is a complex, fact-intensive process that requires significant judgment. The resolution of one or more such proceedings has resulted in, and may in the future result in, additional substantial fines, penalties, injunctions, and other sanctions that could harm our business, financial condition, and operating results.

We may be subject to legal liability associated with providing online services or content.

Our products and services let users exchange information, advertise products and services, conduct business, and engage in various online activities. We also place advertisements displayed on other companies' websites, and we offer third-party products, services, and/or content. The law relating to the liability of online service providers for others' activities on their services is still somewhat unsettled around the world. Claims have been brought against us, and we

expect will continue to be brought against us, for defamation, negligence, breaches of contract, copyright and trademark infringement, unfair competition, unlawful activity, torts, fraud, or other legal theories based on the nature and content of information available on or via our services.

We may be subject to claims by virtue of our involvement in hosting, transmitting, marketing, branding, or providing access to content created by third parties. Defense of any such actions could be costly and involve significant time and attention of our management and other resources, may result in monetary liabilities or penalties, and may require us to change our business in an adverse manner.

Privacy and data protection regulations are complex and rapidly evolving areas. Adverse interpretations of Any failure or alleged failure to comply with these laws could harm our business, reputation, financial condition, and operating results.

Authorities around the world have adopted and are considering a number of legislative and regulatory proposals concerning data protection and limits on encryption of user data. Adverse legal rulings, legislation, or regulation could have resulted in, and may continue to result in, fines and orders requiring that we change our data practices, which could have an adverse effect on our ability to provide services, harming our business operations. Complying with these evolving laws could result in substantial costs and harm the quality of our products and services, negatively affecting our business, and may be particularly challenging during certain times, such as a natural disaster or pandemic (including COVID-19).

Recent legal developments in Europe have created compliance uncertainty regarding transfers of personal data from Europe pandemic. Amongst others, we are and will be subject to the United States. For example, the following laws and regulations:

- The General Data Protection Regulation (GDPR), which applies to all of our activities conducted from an establishment in the EU or related to products and services that we offer to EU

users or customers, or the monitoring of their behavior in the EU. The GDPR creates a Ensuring compliance with the range of new compliance obligations.

Ensuring compliance with obligations created by the GDPR is an ongoing commitment that involves substantial costs, and despite costs. Despite our efforts, governmental authorities or others have asserted and may continue to assert that our business practices fail to comply with its requirements. If our operations are found to violate the GDPR requirements, we may incur substantial fines, have to change our business practices, and face reputational harm, any of which could have an adverse effect on our business. In particular, serious breaches of the GDPR can result in administrative fines of up to 4% of annual worldwide revenues. Fines of up to 2% of annual worldwide revenues can be levied for other specified violations.

- Various state privacy laws, such as the California Consumer Privacy Act of 2018 (CCPA), which came into effect in January of 2020; the California Privacy Rights Act (CPRA), which will go into effect in 2023; the Virginia Consumer Data Protection Act (Virginia CDPA), which will go into effect in 2023; and the Colorado Privacy Act (ColoPA), which will go into effect in 2023; all of which give new data privacy rights to their respective residents (including, in California, a private right of action in the event of a data breach resulting from our failure to implement and maintain reasonable security procedures and practices) and impose significant obligations on controllers and processors of consumer data.
- SB-327 in California, which regulates the security of data in connection with internet connected devices.

Further, we are subject to evolving laws and regulations that dictate whether, how, and under what circumstances we can transfer, process and/or receive personal data. The EU-U.S. and the Swiss-U.S. Privacy Shield frameworks allow that previously allowed U.S. companies that self-certify to the U.S. Department of Commerce and publicly commit to comply with specified requirements to import personal data from the EU and Switzerland. Recently, Switzerland have been invalidated by the CJEU. The CJEU ruled that the EU-U.S. Privacy Shield is an invalid transfer mechanism, but upheld Standard Contractual Clauses (SCCs) as a valid transfer mechanism, provided they meet certain requirements. On June 4, 2021, the European Commission published new SCCs for this purpose, and we may have to adapt our existing contractual arrangements to meet these new requirements. The validity of data transfer mechanisms remains subject to legal, regulatory, and political developments in both Europe and the U.S., such as recent recommendations from the European Data Protection Board, the invalidation decisions from supervisory authorities, recent proposals for reform of the EU-U.S. Privacy Shield data transfer mechanisms for transfers of personal data outside the United Kingdom, and potential invalidation of other data transfer mechanisms, which, together with increased enforcement action from supervisory authorities in relation to cross-border transfers of personal data, could have a significant adverse impact effect on our ability to process and transfer personal data outside of the EEA, European Economic Area and/or the United Kingdom.

These laws and regulations are evolving and subject to interpretation, including developments which create some uncertainty, and compliance obligations could cause us to incur costs or harm the operations of our products and services in ways that harm our business. For example, in the EU, several supervisory authorities have issued new guidance concerning the ePrivacy Directive's requirements regarding the use of cookies and similar technologies, including limitations on the use of data across messaging products and specific requirements for enabling users to accept or reject cookies, and have in some cases brought (and may seek to bring in the future) enforcement action in relation to those requirements. In the U.S., certain types of cookies may be deemed sales of personal information

within the CCPA and other state laws, such that certain disclosure requirements and limitations apply to the use of such cookies. In addition, some countries are considering or have passed legislation implementing data protection requirements or requiring local storage and processing of data that could increase the cost and complexity of delivering our services and carries the potential of service interruptions in those countries.

We face, and may continue to face, intellectual property and other claims that could be costly to defend, result in significant damage awards or other costs (including indemnification awards), and limit our ability to use certain technologies in the future.

We, like other internet, technology and media companies, are frequently subject to litigation based on allegations of infringement or other violations of intellectual property rights. In addition, patent-holding companies may frequently seek to generate income from patents they have obtained by bringing claims against us. As we have grown, the number of intellectual property claims against us has increased and may continue to increase as we develop new products, services, and technologies.

We have had patent, copyright, trade secret, and trademark infringement lawsuits filed against us claiming that certain of our products, services, and technologies infringe the intellectual property rights of others. Other parties have also sought broad injunctive relief against us by filing claims in U.S. and international courts and the U.S. International Trade Commission (ITC) for exclusion and cease-and-desist orders, which could limit our ability to sell our products or services in the U.S. or elsewhere if our products or services or those of our customers or suppliers are found to infringe the intellectual property subject to the claims. Adverse results in any of these lawsuits may include awards of monetary damages, costly royalty or licensing agreements (if licenses are available at all), or orders preventing us from offering certain features, functionalities, products, or services. They may also cause us to change our business practices and require development of non-infringing products, services, or technologies, which could result in a loss of revenues for us and otherwise harm our business.

Many of our agreements with our customers and partners, including certain suppliers, require us to defend against certain intellectual property infringement claims and in some cases indemnify them for certain intellectual property infringement claims against them, which could result in increased costs for defending such claims or significant damages if there were an adverse ruling in any such claims. Such customers and partners may also discontinue the use of our products, services, and technologies, as a result of injunctions or otherwise, which could result in loss of revenues and adversely affect our business. Moreover, intellectual property indemnities provided to us by our suppliers, when obtainable, may not cover all damages and losses suffered by us and our customers arising from intellectual property infringement claims. Furthermore, in connection with our divestitures, we have agreed, and may in the future agree, to provide indemnification for certain potential liabilities, including those associated with intellectual property claims.

Regardless of their merits, intellectual property claims are often time consuming and expensive to litigate or settle. To the extent such claims are successful, they may harm our business, including our product and service offerings, financial condition, or operating results.

Risks Related to Ownership of our Stock

We cannot guarantee that any share repurchase program will be fully consummated or will enhance long-term stockholder value, and share repurchases could increase the volatility of our stock prices and could diminish our cash reserves.

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reserves.

We engage in share repurchases of our Class A and Class C capital stock from time to time in accordance with authorizations from the Board of Directors of Alphabet. Our repurchase program does not have an expiration date and does not obligate Alphabet to repurchase any specific dollar amount or to acquire any specific number of shares. Further, our share repurchases could affect our share trading prices, increase their volatility, reduce our cash reserves and may be suspended or terminated at any time, which may result in a decrease in the trading prices of our stock.

The concentration of our stock ownership limits our stockholders' ability to influence corporate matters.

Our Class B common stock has 10 votes per share, our Class A common stock has one vote per share, and our Class C capital stock has no voting rights. As of December 31, 2020, December 31, 2021, Larry Page and Sergey Brin beneficially owned approximately 85.3% approximately 85.9% of our outstanding Class B common stock, which represented approximately 51.5% of approximately 51.4% of the voting power of our outstanding common stock. Through their stock ownership, Larry and Sergey have significant influence over all matters requiring stockholder approval, including the election of directors and significant corporate transactions, such as a merger or other sale of our company or our assets, for the foreseeable future. In addition, because our Class C capital stock carries no voting rights (except as required by applicable law), the issuance of the Class C capital stock, including in future stock-based acquisition transactions and to fund employee equity incentive programs, could continue Larry and Sergey's current relative voting power and their ability to elect all of our directors and to determine the outcome of most matters submitted to a vote of our stockholders. The share repurchases made pursuant to our repurchase program may also

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affect Larry and Sergey's relative voting power. This concentrated control limits or severely restricts other stockholders' ability to influence corporate matters and we may take actions that some of our stockholders do not view as beneficial, which could reduce the market price of our Class A common stock and our Class C capital stock.

Provisions in our charter documents and under Delaware law could discourage a takeover that stockholders may consider favorable.

Provisions in Alphabet's certificate of incorporation and bylaws may have the effect of delaying or preventing a change of control or changes in our management. These provisions include the following:

- Our certificate of incorporation provides for a tri-class capital stock structure. As a result of this structure, Larry and Sergey have significant influence over all matters requiring stockholder approval, including the election of directors and significant corporate transactions, such as a merger or other sale of our company or our assets, approval. This concentrated control could discourage others from initiating any potential merger, takeover, or other change of control transaction that other stockholders may view as beneficial. As noted above, the issuance of the Class C capital stock could have the effect of continuing the influence of Larry and Sergey.
- Our Board of Directors has the right to elect directors to fill a vacancy created by the expansion of the Board of Directors or the resignation, death, or removal of a director, which prevents stockholders from being able to fill vacancies on our Board of Directors, director.

- Our stockholders may not act by written consent. As a result, a holder, or holders, controlling a majority of our capital stock would not be able to consent, which makes it difficult to take certain actions without holding a stockholders' meeting.
- Our certificate of incorporation prohibits cumulative voting in the election of directors. This limits the ability of minority stockholders to elect director candidates.
- Stockholders must provide advance notice to nominate individuals for election to the Board of Directors or to propose matters that can be acted upon at a stockholders' meeting. These provisions may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of our company.
- Our Board of Directors may issue, without stockholder approval, shares of undesignated preferred stock. The ability to issue undesignated preferred stock, which makes it possible for our Board of Directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to acquire us.

As a Delaware corporation, we are also subject to certain Delaware anti-takeover provisions. Under Delaware law, a corporation may not engage in a business combination with any holder of 15% or more of its outstanding voting stock unless the holder has held the stock for three years or, among other things, the Board of Directors has approved the transaction. Our Board of Directors could rely on Delaware law to prevent or delay an acquisition of us.

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General Risks

The continuing impacts effects of COVID-19 are highly unpredictable and could be significant, and may have an adverse effect on our business, operations and our future financial performance.

Since COVID-19 was declared a global pandemic by the World Health Organization, governments our business, operations and municipalities around financial performance have been, and may continue to be, affected by the world have instituted measures in an effort macroeconomic impacts resulting from the efforts to control the spread of COVID-19, including quarantines, shelter-in-place orders, school closings, travel restrictions, and closure of non-essential businesses. The macroeconomic impacts on our business continue to evolve and be unpredictable and may continue to adversely affect our business, operations and financial performance. COVID-19. As a result of the scale of the ongoing pandemic, including the introduction of new variants of COVID-19 and vaccination and other efforts to control the speed at which the global community has been impacted, spread, our revenue growth rate and expense expenses as a percentage of our revenues in future periods may differ significantly from our historical rate, rates, and our future operating results may fall below expectations.

The future impacts of the ongoing pandemic on our business, operations and future financial performance could include, but are not limited to:

- Significant decline in advertising revenues as advertiser spending slows due to an economic downturn. This decline in advertising revenues could persist through and beyond a recessionary period. In addition, Additionally, we may experience a significant and prolonged shift in user behavior such as a shift in interests to less commercial topics.
- Significant decline in other revenues due to a decline or shifts in customer demand. For example, if consumer demand for electronics significantly declines, our hardware revenues could be significantly impacted.
- Adverse impacts to our operating income, operating margin, net income, EPS and respective growth rates - particularly if expenses do not decrease across Alphabet at the same pace as revenue declines. Many of our expenses are less variable in nature and/or may not correlate to changes in revenues, including costs associated with our data centers and facilities as well as employee compensation. As such, we may not be able to decrease them significantly in the short-term, or we may choose not to significantly reduce them in an effort to remain focused on long-term outlook and investment opportunities.
- Significant decline in our operating cash flows as a result of decreased advertiser spending and deterioration the pandemic, our workforce shifted to operating in the credit quality and liquidity of our customers, which could adversely affect our accounts receivable. Investing cash flows could decrease due to slowing spend on data center and facilities construction projects due to a slowing or stopping of construction or significant restrictions placed on construction.
- The prolonged and broad-based shift to a primarily remote working environment, which continues to create inherent productivity, connectivity, and oversight challenges challenges. The effects of the ongoing pandemic are dynamic and could affect our ability to enhance, develop and support existing products and services, detect and prevent spam and problematic content, hold product sales and marketing events, and generate new sales leads, among others. In addition, the changed environment under which we are operating could have an effect on our internal controls over financial reporting as well as our ability to meet a number of our compliance requirements in a timely or quality manner. Additional and/or extended, governmental lockdowns, restrictions or new regulations could significantly impact the ability of our employees and vendors to work productively. Governmental restrictions have been globally inconsistent and it remains unclear when a return to worksite locations or travel will be permitted or what restrictions will be in place in those environments, uneven. As we prepare to return our workforce in more locations back to the office, in 2021, we may experience increased costs and/or disruption as we prepare our facilities for a safe return to work environment and experiment with hybrid work models, in addition to potential effects on our ability to compete operate effectively and maintain our corporate culture.

Our operating results may fluctuate, which makes our results difficult to predict and could cause our results to fall short of expectations.

Our operating results have fluctuated, and may in the future fluctuate, as a result of a number of factors, many outside of our control.

control, including the cyclicity and seasonality in our business and geopolitical events. As a result, comparing our operating results (including our expenses as a percentage of our revenues) on a period-to-period basis may not be meaningful, and you our past results should not rely be relied on our past results as an indication of our future performance. Our Consequently, our operating results in future quarters may fall below expectations. Any of these events could cause our stock price to fall. Each of the risk factors listed under this Item 1A in addition to the following factors may affect our operating results:

- Our ability to attract user and/or customer adoption of, and generate significant revenues from, new products, services, and technologies in which we have invested considerable time and resources.

- Our ability to monetize traffic on Google Search & other properties, YouTube and our Google Network Members' properties across various devices.
- The amount and timing of operating costs and expenses and capital expenditures related to the maintenance and expansion of our businesses, operations, and infrastructure.
- Our focus on long-term goals over short-term results.
- The results of our acquisitions, divestitures, and our investments in risky projects, including new businesses, products, services, and technologies.
- Our ability to keep our products and services operational at a reasonable cost and without service interruptions.
- The seasonal fluctuations in internet usage, advertising spending, and underlying business trends such as traditional retail seasonality. Our rapid growth has tended to mask the cyclical and seasonality of our business. As our growth rate has slowed, the cyclical and seasonality in our business has become more pronounced and caused our operating results to fluctuate.
- Geopolitical events, including trade disputes.
- Changes in global business or macroeconomic conditions.

Acquisitions, joint ventures, investments, and divestitures could result in operating difficulties, dilution, and other consequences that may harm our business, financial condition, and operating results.

Acquisitions, joint ventures, investments and divestitures are important elements of our overall corporate strategy and use of capital, and these transactions could be material to our financial condition and operating results. We expect to continue to evaluate and enter into discussions regarding a wide array of such potential strategic transactions, which could create unforeseen operating difficulties and expenditures. Some of the areas where we face risks include:

- Diversion of management time and focus from operating our business to challenges related to acquisitions and other strategic transactions;
- Failure to successfully integrate and further develop the acquired business or technology;
- Implementation or remediation of controls, procedures, and policies at the acquired company;
- Integration of the acquired company's accounting, human resource, and other administrative systems, and coordination of product, engineering, and sales and marketing functions;
- Transition of operations, users, and customers onto our existing platforms;
- Failure to obtain required approvals on a timely basis, if at all, from governmental authorities, or conditions placed upon approval that could, among other things, delay or prevent us from completing a transaction, or otherwise restrict our ability to realize the expected financial or strategic goals of a transaction;
- In failure to successfully integrate and further develop the acquired business or technology;
- Implementation or remediation of controls, procedures, and policies at the acquired company;
- Integration of the acquired company's accounting, human resource (including cultural integration and retention of employees), and other administrative systems, and coordination of product, engineering, and sales and marketing functions;
- Transition of operations, users, and customers onto our existing platforms;
- In the case of foreign acquisitions, the need to integrate operations across different cultures and languages and to address the particular economic, currency, political, and regulatory risks associated with specific countries;
- Cultural challenges associated with integrating employees from the acquired company into our organization, and retention of employees from the businesses we acquire;
- Liability for activities of the acquired company before the acquisition, including patent and trademark infringement claims, data privacy and security issues, violations of laws, commercial disputes, tax liabilities, warranty claims, product liabilities, and other known and unknown liabilities;
- Litigation or other claims in connection with the acquired company, including claims from terminated employees, customers, former stockholders, or other third parties.

Our failure to address these risks or other problems encountered in connection with our past or future acquisitions and other strategic transactions could cause us to fail to realize their anticipated benefits, incur unanticipated liabilities, and harm our business generally.

Our acquisitions and other strategic transactions could also result in dilutive issuances of our equity securities, the incurrence of debt, contingent liabilities, or amortization expenses, or impairment of goodwill and/or purchased long-lived assets, and restructuring charges, any of which could harm our financial condition or operating results.

Also, the anticipated benefits or value of our acquisitions and other strategic transactions may not materialize. In connection with our divestitures, we have agreed, and may in the future agree, to provide indemnification for certain potential liabilities, which may harm our financial condition or operating results.

If we were to lose the services of key personnel, we may not be able to execute our business strategy.

Our future success depends in large part upon the continued service of key members of our senior management team. For instance, Sundar Pichai is critical to the overall management of Alphabet and its subsidiaries and plays an important role in the development of our technology, maintaining our culture, and setting our strategic direction. All of our executive officers and key employees are at-will employees, and we do not maintain any key-person life insurance policies. The loss of key personnel could seriously harm our business.

We rely on highly skilled personnel and, if we are unable to retain or motivate key personnel, hire qualified personnel, or maintain our corporate culture, we may not be able to grow effectively.

Our performance largely depends on the talents and efforts of highly skilled individuals. Our ability to compete effectively and our future success depends on our continuing to identify, hire, develop, motivate, and retain highly skilled personnel for all areas of our organization. Competition in our industry for qualified employees is intense, and certain of our competitors have directly targeted our employees. In addition, our compensation arrangements, such as our equity award programs, may not always be successful in attracting new employees and retaining and motivating our existing employees. Restrictive immigration policy and regulatory changes may also impact affect our ability to hire, mobilize, or retain some of our global talent.

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In addition, we believe that our corporate culture fosters innovation, creativity, and teamwork. As our organization grows and evolves, we may need to implement more complex organizational management structures or adapt our corporate culture and work environments to ever-changing circumstances, such as during times of a natural disaster or pandemic, (including COVID-19), and these changes could impact affect our ability to compete effectively or have an adverse impact effect on our corporate culture.

We are exposed to fluctuations in the market fair values of our investments and, in some instances, our financial statements incorporate valuation methodologies that are subjective in nature resulting in fluctuations over time.

The market fair value of our investments can may in the future be, and certain investments have been in the past, negatively affected by liquidity, credit deterioration or losses, performance and financial results of the underlying entities, foreign exchange rates, changes in interest rates, including changes that may result from the implementation of new benchmark rates, the effect of new or changing regulations, the stock market in general, or other factors. The effect of COVID-19 on our impairment assessment for non-marketable investments requires significant judgment due to the uncertainty around the duration and severity of the impact.

We measure certain of our non-marketable equity and debt investments securities, certain other instruments including stock-based compensation awards settled in the stock of certain Other Bets, and certain assets and liabilities acquired in a business combination, at fair value on a nonrecurring basis. The determination of fair value involves use of appropriate valuation methods and certain unobservable inputs, require requires management judgment and estimation, and may change over time.

We adjust the carrying value of our non-marketable equity investments securities to fair value for observable transactions of identical or similar investments of the same issuer or for impairments. All gains and losses on non-marketable equity securities, realized and unrealized, are recognized in other income (expense), which increases the volatility of our other income (expense). The unrealized gains and losses we record on from fair value remeasurements of our non-marketable equity securities in any particular period may differ significantly from the realized gains or losses we ultimately experience on such investments.

As a result of these factors, the value or liquidity of our cash equivalents, as well as our marketable and non-marketable securities could decline and result in a material impairment, which could adversely affect our financial condition and operating results.

We could be subject to changes in tax rates, the adoption of new U.S. or international tax legislation, or exposure to additional tax liabilities.

Our future income taxes could be negatively affected by earnings being lower than anticipated in jurisdictions that have lower statutory tax rates and higher than anticipated in jurisdictions that have higher statutory tax rates, the net gains and losses recognized by legal entities on certain hedges and related hedged intercompany and other transactions under our foreign exchange risk management program, decreases in our stock price for shares paid as employee compensation, changes in the valuation of our deferred tax

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assets or liabilities, the application of different provisions of tax laws or changes in tax laws, regulations, or accounting principles (including changes in the interpretation of existing laws), as well as certain discrete items.

In addition, we are subject to regular review and audit by both domestic and foreign tax authorities. As a result, we have received, and may in the future receive, assessments in multiple jurisdictions, including in Europe, on various tax-related assertions, such as transfer-pricing adjustments or permanent-establishment claims. Any adverse outcome of such a review or audit could have a negative effect on our operating results and financial condition and could require us to change our business practices in a manner adverse to our business. It may also subject us to additional litigation and regulatory inquiries, resulting in the diversion of management's time and attention. In addition, the determination of our worldwide provision for income taxes and other tax liabilities requires significant judgment, and there are many transactions and calculations for which the ultimate tax determination is uncertain. Although we believe our estimates are reasonable, the ultimate tax outcome may differ from the amounts recorded in our financial statements and may affect our financial results in the period or periods for which such determination is made.

Furthermore, due to shifting economic and political conditions, tax policies, laws, or rates in various jurisdictions may be subject to significant changes in ways that impair our financial results. Various jurisdictions around the world have enacted or are considering digital services taxes, which could lead to inconsistent and potentially overlapping overlapping international tax regimes. The Organization for Economic Cooperation and Development (OECD) recently released continues to advance proposals relating

to its initiative for modernizing international tax rules, with the goal of having different countries implement a modernized and aligned international tax framework, but there can be no guarantee that this will occur.

In addition, in response to significant market volatility and disruptions to business operations resulting from the global spread of COVID-19, legislatures and taxing authorities in many jurisdictions in which we operate may propose changes to their tax rules. These changes could include modifications that have temporary effect, and more permanent

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changes. The impact effect of these potential new rules on us, our long-term tax planning, and our effective tax rate could be material.

The trading price for our Class A common stock and non-voting Class C capital stock may continue to be volatile.

The trading price of our stock has at times experienced substantial price volatility and may continue to be volatile.

In addition to the factors discussed in this report, the trading price of our Class A common stock and Class C capital stock have fluctuated, and may continue to fluctuate widely, in response to various factors, many of which are beyond our control, including, among others, announcements by us or the activities of our competitors of acquisitions, divestitures, investments, new products, significant contracts, commercial relationships, or capital commitments; recommendations by securities analysts or peers and changes in their earnings estimates; announcements about our or our competitors' earnings that are not in line with analyst expectations, the risk of which is enhanced, in our case, because it is our policy not to give guidance on earnings; commentary by industry and market professionals about our products, strategies, and other matters affecting our business and results, regardless of its accuracy; the volume of shares of Class A common stock and Class C capital stock available for public sale; sales of Class A common stock and Class C capital stock by us or by our stockholders (including sales by our directors, executive officers, and other employees); short sales, hedging, and other derivative transactions on shares of our Class A common stock and Class C capital stock; the size, timing and share class of any share repurchase program; and the perceived values of Class A common stock and Class C capital stock relative to one another.

In addition, the stock market in general, which can be affected by various factors, including overall broader economic and political conditions and around the market for technology companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of those companies.

world. These broad market and industry factors may harm the market price of our Class A common stock and our Class C capital stock, regardless of our actual operating performance.

ITEM 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

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ITEM 2. PROPERTIES

Our headquarters are located in Mountain View, California. We also own and lease office and building space in the surrounding areas near our headquarters, which we believe is sufficient to accommodate anticipated future growth. headquarters. In addition, we own and lease office/building space and research and development R&D sites around the world, primarily in North America, Europe, South America, and Asia. We own and operate data centers in the U.S., Europe, South America, and Asia. We believe our existing facilities, both owned and leased, are in good condition and suitable for the conduct of our business.

ITEM 3. LEGAL PROCEEDINGS

For a description of our material pending legal proceedings, please see Legal Matters in Note 10 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K, which is incorporated herein by reference.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

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PART II

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

As of October 2, 2015, Alphabet Inc. became the successor issuer of Google Inc. pursuant to Rule 12g-3(a) under the Exchange Act. Our Class A common stock has been listed on the Nasdaq Global Select Market under the symbol "GOOG" since August 19, 2004 and under the symbol "GOOGL" since April 3, 2014. Prior to August 19, 2004, there was no public market for our stock. Our Class B common stock is neither listed nor traded. Our Class C capital stock has been listed on the Nasdaq Global Select Market under the symbol "GOOG" since April 3, 2014.

Holders of Record

As of **December 31, 2020** **December 31, 2021**, there were approximately **4,337** **4,907** and **1,942** **1,733** stockholders of record of our Class A common stock and Class C capital stock, respectively. Because many of our shares of Class A common stock and Class C capital stock are held by brokers and other institutions on behalf of stockholders, we are unable to estimate the total number of stockholders represented by these record holders. As of **December 31, 2020** **December 31, 2021**, there were approximately 64 stockholders of record of our Class B common stock.

Dividend Policy

We have never declared or paid any cash dividend on our common or capital stock. The primary use of capital continues to be to invest for the **long term** **long-term** growth of the business. We regularly evaluate our cash and capital structure, including the size, pace, and form of capital return to stockholders.

Issuer Purchases of Equity Securities

The following table presents information with respect to Alphabet's repurchases of Class **A common stock** and Class **C** capital stock during the quarter ended **December 31, 2020** **December 31, 2021**:

Period	Total Number of Shares Purchased as Part of Publicly Announced Programs					Period	Total Number of Shares Purchased				Total Number of Shares Purchased as Part of Publicly Announced Programs		Approximate Dollar Value of Shares that May Yet Be Purchased Under the Program (in millions)
	Total Number of Shares Purchased (in thousands)	Average Price Paid per Share (2)	(1)	(in millions)	Total Number of Class A Shares Purchased (in thousands)		Total Number of Class C Shares Purchased (in thousands)	Average Price Paid per Class A Share (2)	Average Price Paid per Class C Share (2)	(1)			
Period	Period	(1)	per Share (2)	(1)	(in millions)	Period	(1)	(1)	Share (2)	Share (2)	(1)	(in millions)	
October 1 - 31	October 1 - 31	1,869	\$ 1,540.84	1,869	\$ 22,667	October 1 - 31	126	1,445	\$ 2,812.76	\$ 2,794.72	1,571	\$ 26,450	
November 1 - 30	November 1 - 30	1,640	\$ 1,748.65	1,640	\$ 19,799	November 1 - 30	289	1,393	\$ 2,943.97	\$ 2,956.73	1,682	\$ 21,479	
December 1 - 31	December 1 - 31	1,205	\$ 1,787.62	1,205	\$ 17,645	December 1 - 31	250	1,169	\$ 2,880.79	\$ 2,898.56	1,419	\$ 17,371	
Total	Total	4,714		4,714		Total	665	4,007			4,672		

- (1) The repurchases are being executed from time to time, subject to general business and market conditions and other investment opportunities, through open market purchases or privately negotiated transactions, including through Rule 10b5-1 plans. The repurchase program does not have an expiration date. **Please refer to See** Note 11 of the Notes to Consolidated Financial Statements included in **Part II**, Item 8 of this Annual Report on Form 10-K for additional information related to share repurchases.
- (2) Average price paid per share includes costs associated with the repurchases.

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Stock Performance Graphs

The graph below matches Alphabet Inc. Class A's cumulative **5-Year** **5-year** total **shareholder** **stockholder** return on common stock with the cumulative total returns of the S&P 500 index, the NASDAQ Composite index, and the RDG Internet Composite index. The graph tracks the performance of a \$100 investment in our common stock and in each index (with the reinvestment of all dividends) from **December 31, 2015** **December 31, 2016** to **December 31, 2020** **December 31, 2021**. The returns shown are based on historical results and are not intended to suggest future performance.

COMPARISON OF **5 YEAR** CUMULATIVE **5-YEAR** TOTAL RETURN*

ALPHABET INC. CLASS A COMMON STOCK

Among Alphabet Inc., the S&P 500 Index, the

NASDAQ Composite Index, and the RDG Internet Composite Index



goog-20211231_g1.jpg

*\$100 invested on **December 31, 2015** **December 31, 2016** in stock or index, including reinvestment of dividends. Fiscal year ending December 31.

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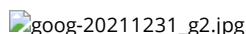
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The graph below matches Alphabet Inc. Class C's cumulative 5-Year 5-year total shareholder stockholder return on capital stock with the cumulative total returns of the S&P 500 index, the NASDAQ Composite index, and the RDG Internet Composite index. The graph tracks the performance of a \$100 investment in our Class C capital stock and in each index (with the reinvestment of all dividends) from December 31, 2015 December 31, 2016 to December 31, 2020 December 31, 2021. The returns shown are based on historical results and are not intended to suggest future performance.

COMPARISON OF CUMULATIVE 5-YEAR TOTAL RETURN*

ALPHABET INC. CLASS C CAPITAL STOCK

Among Alphabet Inc., the S&P 500 Index, the
NASDAQ Composite Index, and the RDG Internet Composite Index



*\$100 invested on December 31, 2015 December 31, 2016 in stock or in index, including reinvestment of dividends. Fiscal year ending December 31.

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ITEM 6. SELECTED FINANCIAL DATA [Reserved]

The following selected consolidated financial data should be read in conjunction with Item 7 "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements and the related notes appearing in Item 8 "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K. The historical results are not necessarily indicative of the results to be expected in any future period.

	Year Ended December 31,									
	2016		2017		2018		2019		2020	
	(in millions, except per share amounts)									
Consolidated Statements of Income Data:										
Revenues	\$	90,272	\$	110,855	\$	136,819	\$	161,857	\$	182,527
Income from operations	\$	23,737	\$	26,178	\$	27,524	\$	34,231	\$	41,224
Net income	\$	19,478	\$	12,662	\$	30,736	\$	34,343	\$	40,269
Basic net income per share of Class A and B common stock	\$	28.32	\$	18.27	\$	44.22	\$	49.59	\$	59.15
Basic net income per share of Class C capital stock	\$	28.32	\$	18.27	\$	44.22	\$	49.59	\$	59.15
Diluted net income per share of Class A and B common stock	\$	27.85	\$	18.00	\$	43.70	\$	49.16	\$	58.61
Diluted net income per share of Class C capital stock	\$	27.85	\$	18.00	\$	43.70	\$	49.16	\$	58.61

	As of December 31,				
	2016	2017	2018	2019	2020
	(in millions)				
Consolidated Balance Sheet Data:					
Cash, cash equivalents, and marketable securities	\$ 86,333	\$ 101,871	\$ 109,140	\$ 119,675	\$ 136,694
Total assets	\$ 167,497	\$ 197,295	\$ 232,792	\$ 275,909	\$ 319,616
Total long-term liabilities	\$ 11,705	\$ 20,610	\$ 20,544	\$ 29,246	\$ 40,238
Total stockholders' equity	\$ 139,036	\$ 152,502	\$ 177,628	\$ 201,442	\$ 222,544

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

Please read the following discussion and analysis of our financial condition and results of operations together with "Note about Forward-Looking Statements," Part I, Item 1 "Business," Part I, Item 1A "Risk Factors," and our consolidated financial statements and related notes included under Part II, Item 8 of this Annual Report on Form 10-K.

We have omitted discussion of 2018 2019 results where it would be redundant to the discussion previously included in Part II, Item 7 of our 2019 2020 Annual Report on Form 10-K.

Understanding Alphabet's Financial Results

Alphabet is a collection of businesses — the largest of which is Google. We report Google in two segments, Google Services and Google Cloud; we also report all non-Google businesses collectively as Other Bets. Other Bets include earlier stage technologies that are further afield from our core Google business. For further details on our segments, see Part I, Item 1 "Business" and Note 15 of the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K.

Trends in Our Business and Financial Effect

The following long-term trends have contributed to the results of our consolidated operations, and we anticipate that they will continue to affect our future results:

- **Users' behaviors and advertising continue to shift online as the digital economy evolves.**

The continuing shift from an offline to online world has contributed to the growth of our business since inception, contributing to revenue growth, and we expect that this online shift will continue to benefit our business.

- **Users are increasingly using diverse devices and modalities to access our products and services, and our advertising revenues are increasingly coming from new formats.**

Our users are accessing the Internet via diverse devices and modalities, such as smartphones, wearables and smart home devices, and want to feel be able to be connected no matter where they are or what they are doing. We seek to expand are focused on expanding our products and services to stay in front of these trends in order to maintain and grow our business.

We generate our are increasingly generating advertising revenues increasingly from different channels, including mobile, and newer advertising formats, and the formats. The margins from the on advertising revenues from these channels and newer products have generally been lower than those from traditional desktop search. Additionally, as the market for a particular device type or modality matures, our revenues may be affected. For example, growth in the global smartphone market has slowed due to various factors, including increased market saturation in developed countries, which can affect our mobile advertising revenue growth rates.

We expect TAC paid to our distribution partners and Google Network Members partners to increase as our revenues grow and TAC as a percentage of our advertising revenues ("TAC rate") to be affected by changes in device mix; geographic mix; partner mix; partner agreement terms; the percentage of queries channeled through paid access points; product mix; the relative revenue growth rates of advertising revenues from different channels; and revenue share terms.

We expect these trends to continue to affect our revenue growth rates and put pressure on our overall margins.

- **As online advertising evolves, we continue to expand our product offerings, which may affect our monetization.**

As interactions between users and advertisers change, and as online user behavior evolves, we continue to expand and evolve our product offerings to serve their these changing needs. Over time, we expect our monetization trends to fluctuate. For example, we have seen an increase in revenues from ads on YouTube ads and Google Play, ads, which monetize at a lower rate than our traditional search ads.

- **As users in developing economies increasingly come online, our revenues from international markets continue to increase and movements in foreign exchange rates affect such revenues.**

The shift to online, as well as the advent of the multi-device world, has brought opportunities outside of the U.S., including in emerging markets, such as India, where we India. We continue to invest heavily and develop localized versions of our products and relevant advertising programs useful relevant to our users in these markets. This has led to a trend of increased revenues from international markets over time, as regions with emerging markets, such as APAC, have demonstrated higher revenue growth rates, markets. We expect that our results will continue to be affected by our performance in these markets, particularly as low-cost mobile devices become more available. This trend could impact affect our margins revenues as developing markets initially monetize at a lower rate than more mature markets.

Our international

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International revenues represent a significant portion of our revenues and are subject to fluctuations in foreign currency exchange rates relative to the U.S. dollar. While we have a foreign exchange risk management program designed to reduce our exposure to these fluctuations, this program does not fully offset their effect on our revenues and earnings.

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- **The portion of our revenues that we derive from non-advertising revenues is increasing and may adversely affect margins.**

Non-advertising revenues have grown over time. We expect this trend to continue as we focus on expanding our offerings to our users through products and services like Google Cloud, Google Play, hardware products, and YouTube subscriptions. Across these initiatives, we We currently derive non-advertising revenues primarily from sales of apps and in-app purchases, digital content products, and hardware; and licensing and service fees, including fees received for Google Cloud services and subscription and other services. The A number of Other Bets initiatives are in their initial development stages, and as such, revenues from these businesses could be volatile. In addition, the margins on these revenues vary significantly and may be lower than the margins on our advertising revenues. A number of our Other Bets initiatives are in their initial development stages, and as such, the sources of revenues from these businesses could change over time and the revenues could be volatile.

- **As we continue to serve our users and expand our businesses, we will invest heavily in operating and capital expenditures.**

We continue to make significant R&D investments in areas of strategic focus such as advertising, cloud, machine learning across Google Services, Google Cloud and search, as well as in new products and services. In addition, we Other Bets. We also expect to continue to invest in land and buildings for data centers and offices, and information technology assets, which includes servers and network equipment, to support the long-term growth of our business.

In addition, acquisitions and strategic investments are an important part of our strategy and use of capital, contributing contribute to the breadth and depth of our offerings, expanding expand our expertise in engineering and other functional areas, and building build strong partnerships around strategic initiatives. For example, in 2020 January 2021 we announced our Google closed the acquisition of Fitbit, Inc. for India Digitization Fund \$2.1 billion, which is expected to invest approximately \$10 billion into India over the next 5-7 years through a mix of equity investments, partnerships, and operational, infrastructure and ecosystem investments. help spur innovation in wearable devices.

- **We face continuing changes in regulatory conditions, laws, and public policies, which could impact affect our business practices and financial results.**

Changes in social, political, economic, tax, and regulatory conditions or in laws and policies governing a wide range of topics and related legal matters have resulted in fines and caused us to change our business practices. As these global trends continue, for example the recent antitrust complaints filed by the U.S. Department of Justice and a number of state Attorneys General as well as the News Media Bargaining Code drafted by the Australian Competition and Consumer Commission, our cost of doing business may increase, and our ability to pursue certain business models or offer certain products or services may be limited. Examples include the antitrust complaints filed by the U.S. Department of Justice and a number of state Attorneys General, the Digital Markets Act in Europe, and various legislative proposals in the U.S. focused on large technology platforms.

- **Our employees are critical to our success and we expect to continue investing in them.**

Our employees are among our best assets and are critical for our continued success. We expect to continue hiring talented employees around the globe and to provide competitive compensation programs to our employees. programs. For additional information see Culture and Workforce in Part I, Item 1 "Business."

The Impact of COVID-19 on Seasonality and other

Our advertising revenues are affected by seasonal fluctuations in internet usage, advertising expenditures, and underlying business trends, such as traditional retail seasonality. Additionally, our Results non-advertising revenues, including those generated from Google Cloud, Google Play, hardware, and Operations

In late 2019, an outbreak of COVID-19 emerged and YouTube, may be affected by March 11, 2020 was declared a global pandemic fluctuations driven by the World Health Organization. Across the United States and the world, governments and municipalities instituted measures in an effort to control the spread of COVID-19, including quarantines, shelter-in-place orders, school closings, travel restrictions and the closure of non-essential businesses. The macroeconomic impacts of COVID-19 are significant and continue to evolve, as exhibited by, among other things, a rise in unemployment, changes in consumer behavior, pricing, digital content releases, fee structures, new product and service launches, other market volatility.

We began to observe the impact of COVID-19 and the related reductions in global economic activity on our financial results in March 2020 when, despite an increase in users' search activity, our advertising revenues declined compared to the prior year due to a shift of user search activity to less commercial topics and reduced spending by our advertisers. During the course of the quarter ended June 30, 2020, we observed a gradual return in user search activity to more commercial topics, followed by increased spending by our advertisers that continued throughout the second half of 2020.

We continue to assess the realized and potential credit deterioration of our customers due to changes in the macroeconomic environment, which has been reflected in our allowance for credit losses for accounts receivable. Additionally, over the course of the year we experienced variability in our margins as many of our expenses are less variable in nature and/or may not correlate to changes in revenues, including costs associated with our data centers and facilities dynamics, as well as employee compensation. Also, market volatility has contributed to fluctuations seasonality.

Revenues and Monetization Metrics

Google Services

Google Services revenues consist of revenues generated from advertising ("Google advertising") as well as revenues from other sources ("Google other revenues").

Google Advertising

Google advertising revenues are comprised of the following:

- Google Search & other, which includes revenues generated on Google search properties (including revenues from traffic generated by search distribution partners who use Google.com as their default search in the valuation of our equity investments. browsers, toolbars, etc.), and other Google owned and operated properties like Gmail, Google Maps, and Google Play;
- YouTube ads, which includes revenues generated on YouTube properties; and

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While we continued Google Network, which includes revenues generated on Google Network properties participating in AdMob, AdSense, and Google Ad Manager.

We use certain metrics to make investments in land and buildings for data centers, offices and information technology, in 2020 we slowed the pace of our investments, primarily track how well traffic across various properties is monetized as it relates to office facilities, as a result of COVID-19.

The ongoing impact of COVID-19 our advertising revenues: paid clicks and cost-per-click pertain to traffic on Google Search & other properties, while impressions and cost-per-impressions pertain to traffic on our business continues Network partners' properties.

Paid clicks represent engagement by users and include clicks on advertisements by end-users on Google search properties and other Google owned and operated properties including Gmail, Google Maps, and Google Play. Cost-per-click is defined as click-driven revenues divided by our total number of paid clicks and represents the average amount we charge advertisers for each engagement by users.

Impressions include impressions displayed to evolve users on Google Network properties participating primarily in AdMob, AdSense, and be unpredictable. For example, Google Ad Manager. Cost-per-impression is defined as impression-based and click-based revenues divided by our total number of impressions, and represents the

average amount we charge advertisers for each impression displayed to the extent the pandemic disrupts economic activity globally we, like other businesses, are not immune to continued adverse impacts to users.

As our business operations evolves, we periodically review, refine, and financial results from volatility in advertising spending, changes in user behavior update our methodologies for monitoring, gathering, and preferences, credit deterioration and liquidity of our customers, depressed economic activity, or volatility in capital markets. The ongoing impact will depend on a counting the number of factors, including the duration and severity of the pandemic; the uneven impact to certain industries; advances in testing, treatment and prevention including vaccines; paid clicks and the macroeconomic impact number of government measures to contain impressions, and for identifying the spread of revenues generated by the virus corresponding click and related government stimulus measures. impression activity.

To address the potential impact to our business, over the near-term, we continue to evaluate the pace of our investment plans, including, but not limited to, our hiring, investments in data centers, servers, network equipment, real estate and facilities, marketing and travel spending. Our advertising revenue growth, as well as taking certain measures the change in paid clicks and cost-per-click on Google Search & other properties and the change in impressions and cost-per-impression on Google Network properties and the correlation between these items, have been affected and may continue to support be affected by various factors, including:

- advertiser competition for keywords;
- changes in advertising quality, formats, delivery or policy;
- changes in device mix;
- changes in foreign currency exchange rates;
- fees advertisers are willing to pay based on how they manage their advertising costs;
- general economic conditions, including the effect of COVID-19;
- seasonality; and
- traffic growth in emerging markets compared to more mature markets and across various advertising verticals and channels.

Google Other

Google other revenues are comprised of the following:

- Google Play, which includes sales of apps and in-app purchases and digital content sold in the Google Play store;
- Devices and Services, which includes sales of hardware, including Fitbit wearable devices, Google Nest home products, and Pixel phones;
- YouTube non-advertising, which includes YouTube Premium and YouTube TV subscriptions; and
- other products and services.

Google Cloud

Google Cloud revenues are comprised of the following:

- Google Cloud Platform, which includes fees for infrastructure, platform, and other services;
- Google Workspace, which includes fees for cloud-based collaboration tools for enterprises, such as Gmail, Docs, Drive, Calendar and Meet; and
- other enterprise services.

Other Bets

Revenues from Other Bets are generated primarily from the sale of health technology and internet services.

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For further details on how we recognize revenue, see Note 1 of the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K.

Costs and Expenses

Our cost structure has two components: cost of revenues and operating expenses. Our operating expenses include costs related to R&D, sales and marketing, and general and administrative functions. Certain of these expenses, including those associated with the operation of our customers, technical infrastructure as well as components of our overall workforce, operating expenses, are generally less variable in nature and communities we operate in. As we look to return our workforce in more locations back may not correlate to the office changes in 2021, revenue.

Cost of Revenues

Cost of revenues is comprised of TAC and other costs of revenues.

- TAC includes:
 - Amounts paid to our distribution partners who make available our search access points and services. Our distribution partners include browser providers, mobile carriers, original equipment manufacturers, and software developers.
 - Amounts paid to Google Network partners primarily for ads displayed on their properties.
- Other cost of revenues includes:

- Content acquisition costs, which are payments to content providers from whom we may experience increased license video and other content for distribution on YouTube and Google Play (we pay fees to these content providers based on revenues generated or a flat fee).
- Expenses associated with our data centers (including bandwidth, compensation expenses, depreciation, energy, and other equipment costs) as well as other operations costs (such as content review as well as customer and product support costs).
- Inventory and other costs related to the hardware we prepare sell.

The cost of revenues as a percentage of revenues generated from ads placed on Google Network properties are significantly higher than the cost of revenues as a percentage of revenues generated from ads placed on Google Search & other properties, because most of the advertiser revenues from ads served on Google Network properties are paid as TAC to our facilities Google Network partners.

Operating Expenses

Operating expenses are generally incurred during our normal course of business, which we categorize as either R&D, sales and marketing, or general and administrative.

The main components of our R&D expenses are:

- compensation expenses for a safe return engineering and technical employees responsible for R&D related to work environment our existing and experiment with hybrid work models. At new products and services;
- depreciation; and
- professional services fees primarily related to consulting and outsourcing services.

The main components of our sales and marketing expenses are:

- compensation expenses for employees engaged in sales and marketing, sales support, and certain customer service functions; and
- spending relating to our advertising and promotional activities in support of our products and services.

The main components of our general and administrative expenses are:

- compensation expenses for employees in finance, human resources, information technology, legal, and other administrative support functions;
- expenses related to legal matters, including fines and settlements; and
- professional services fees, including audit, consulting, outside legal, and outsourcing services.

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Other Income (Expense), Net

Other income (expense), net primarily consists of interest income (expense), the same time, effect of foreign currency exchange gains (losses), net gains (losses) and impairment on our marketable and non-marketable securities, performance fees, and income (loss) and impairment from our equity method investments.

For additional details, including how we believe the current environment is accelerating digital transformation account for our investments and we remain focused on innovating and investing factors that can drive fluctuations in the services we offer value of our investments, see Note 1 and Note 3 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K as well as Item 7A, "Quantitative and businesses. For example, as it relates to Google Cloud, we continue to invest aggressively around Qualitative Disclosures About Market Risk".

Provision for Income Taxes

Provision for income taxes represents the globe estimated amount of federal, state, and foreign income taxes incurred in our go-to-market capabilities, product development and technical infrastructure to support long term growth. The ongoing impact of COVID-19 the U.S. and the extent many jurisdictions in which we operate. The provision includes the effect of these measures we have taken reserve provisions and changes to reserves that are considered appropriate as well as the related net interest and penalties.

For additional measures that we may implement could have details, including a material impact reconciliation of the U.S. federal statutory rate to our effective tax rate, see Note 14 of the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on our financial results. Our past results may not be indicative of our future performance, and historical trends in our financial results may differ materially. Form 10-K.

Executive Overview

The following table summarizes our consolidated financial results for the years ended December 31, 2019 December 31, 2020 and 2020 2021 unless otherwise specified (in millions, except for per share information and percentages):

	Year Ended December 31,	
	2019	2020
Revenues	\$161,857	\$182,527
Increase in revenues year over year	18 %	13 %
Increase in constant currency revenues year over year	20 %	14 %
Operating income ⁽¹⁾	\$ 34,231	\$ 41,224
Operating margin ⁽¹⁾	21 %	23 %

Other income (expense), net	\$	5,394	\$	6,858
Net Income ⁽¹⁾	\$	34,343	\$	40,269
Diluted EPS ⁽¹⁾	\$	49.16	\$	58.61

	Year Ended December 31,			
	2020	2021	\$ Change	% Change
Consolidated revenues	\$ 182,527	\$ 257,637	\$ 75,110	41 %
Change in consolidated constant currency revenues				39 %
Cost of revenues	\$ 84,732	\$ 110,939	\$ 26,207	31 %
Operating expenses	\$ 56,571	\$ 67,984	\$ 11,413	20 %
Operating income	\$ 41,224	\$ 78,714	\$ 37,490	91 %
Operating margin	23 %	31 %		8 %
Other income (expense), net	\$ 6,858	\$ 12,020	\$ 5,162	75 %
Net Income	\$ 40,269	\$ 76,033	\$ 35,764	89 %
Diluted EPS	\$ 58.61	\$ 112.20	\$ 53.59	91 %
Number of Employees	135,301	156,500	21,199	16 %

- (1) Results for 2019 include the Revenues were \$257.6 billion, an increase of 41%. The increase in revenues was primarily driven by Google Services and Google Cloud. The adverse effect of COVID-19 on 2020 advertising revenues also contributed to the \$1.7 billion EC fine, year-over-year growth.
- Cost of revenues was \$110.9 billion, an increase of 31%, primarily driven by increases in TAC and content acquisition costs. An overall increase in data centers and other operations costs was partially offset by a reduction in depreciation expense due to the change in the estimated useful life of our servers and certain network equipment.
 - Operating expenses were \$68.0 billion, an increase of 20%, primarily driven by headcount growth, increases in advertising and promotional expenses and charges related to legal matters.

Other information:

- Operating cash flow was \$91.7 billion, primarily driven by revenues generated from our advertising products.
- Share repurchases were \$50.3 billion, an increase of 62%. See Note 10 11 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K for further information.
- Total revenues were \$182.5 billion, an increase of 13% year over year, primarily driven by an increase in Google Services segment revenues of \$16.8 billion or 11% and an increase in Google Cloud segment revenues of \$4.1 billion or 46%. Revenues from the United States, EMEA, APAC, and Other Americas were \$85.0 billion, \$55.4 billion, \$32.6 billion, and \$9.4 billion, respectively.
- Total cost of revenues was \$84.7 billion, an increase of 18% year over year. TAC was \$32.8 billion, an increase of 9% year over year, primarily driven by an increase in revenues subject to TAC. Other cost of revenues were \$51.9 billion, an increase of 24% year over year, primarily driven by an increase in data centers and other operations costs and content acquisition costs.

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- Operating expenses were \$56.6 billion, an increase of 5% year over year primarily driven by headcount growth and partially offset by declines in advertising and promotional expenses and travel and entertainment expenses.

Other information:

- Operating cash flow was \$65.1 billion.
- Capital expenditures, which primarily included reflected investments in technical infrastructure, were \$22.3 billion \$24.6 billion.
- Number In January 2021, we updated the useful lives of employees was 135,301 as certain of December 31, 2020. The majority our servers and network equipment, resulting in a reduction in depreciation expense of new hires during \$2.6 billion recorded primarily in cost of revenues and R&D. See Note 1 of the year were engineers Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K for further information.

- Our acquisition of Fitbit closed in early January 2021, and product managers, the related revenues are included in Google other. See Note 8 of the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K for further information.
- On February 1, 2022, the Company announced that the Board of Directors had approved and declared a 20-for-one stock split in the form of a one-time special stock dividend on each share of the Company's Class A, Class B, and Class C stock. See Note 11 of the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K for additional information.

Our Segments The Effect of COVID-19 on our Financial Results

Beginning We began to observe the effect of COVID-19 on our financial results in March 2020 when, despite an increase in users' search activity, our advertising revenues declined compared to the fourth prior year. This was due to a shift of user search activity to less commercial topics and reduced spending by our advertisers. For the quarter ended June 30, 2020 our advertising revenues declined due to the continued effects of COVID-19 and the related reductions in global economic activity, but we observed a gradual return in user search activity to more commercial topics. This was followed by increased spending by our advertisers, which continued throughout the second half of 2020. Additionally, over the course of 2020, we report experienced variability in our segment margins as many of our expenses are less variable in nature and/or may not correlate to changes in revenues. Market volatility contributed to fluctuations in the valuation of our equity investments. Further, our assessment of the credit deterioration of our customers due to changes in the macroeconomic environment during the period was reflected in our allowance for credit losses for accounts receivable.

Throughout 2021 we remained focused on innovating and investing in the services we offer to consumers and businesses to support our long-term growth. The impact of COVID-19 on 2020 financial results as Google Services, Google Cloud, affected year-over-year growth trends. The COVID-19 pandemic continues to evolve, be unpredictable and Other Bets:

- Google Services includes products affect our business and services such as ads, Android, Chrome, hardware, Google Maps, Google Play, Search, financial results. Our past results may not be indicative of our future performance, and YouTube. Google Services generates revenues primarily from advertising; sales of apps, in-app purchases, digital content products, and hardware; and fees received for subscription-based products such as YouTube Premium and YouTube TV.
- Google Cloud includes Google's infrastructure and data analytics platforms, collaboration tools, and other services for enterprise customers. Google Cloud generates revenues primarily from fees received for Google Cloud Platform ("GCP") services and Google Workspace (formerly known as G Suite) collaboration tools.
- Other Bets is a combination of multiple operating segments that are not individually material. Revenues from the Other Bets are derived primarily through the sale of internet services as well as licensing and R&D services.

Unallocated corporate costs primarily include corporate initiatives, corporate shared costs, such as finance and legal, including fines and settlements, as well as costs associated with certain shared research and development activities. Additionally, hedging gains (losses) related to revenue are included historical trends in corporate costs, our financial results may differ materially.

Financial Results

Revenues

The following table presents our revenues by type (in millions):

		Year Ended December 31,			Year Ended December 31,		
		2019	2020		2020	2021	
Google Search & other	Google Search & other	\$ 98,115	\$ 104,062	Google Search & other	\$ 104,062	\$ 148,951	
YouTube ads	YouTube ads	15,149	19,772	YouTube ads	19,772	28,845	
Google Network Members' properties		21,547	23,090				
Google Network				Google Network		23,090	31,701
Google advertising	Google advertising	134,811	146,924	Google advertising	146,924	209,497	
Google other	Google other	17,014	21,711	Google other	21,711	28,032	
Google Services total	Google Services total	151,825	168,635	Google Services total	168,635	237,529	
Google Cloud	Google Cloud	8,918	13,059	Google Cloud	13,059	19,206	
Other Bets	Other Bets	659	657	Other Bets	657	753	
Hedging gains (losses)	Hedging gains (losses)	455	176	Hedging gains (losses)	176	149	
Total revenues	Total revenues	\$ 161,857	\$ 182,527	Total revenues	\$ 182,527	\$ 257,637	

Google Services

Google advertising revenues

Our advertising revenue growth, as well as the change in paid clicks and cost-per-click on Google Search & other

Google Search & other properties revenues increased \$44.9 billion from 2020 to 2021. The overall growth was driven by interrelated factors including increases in search queries resulting from growth in user adoption and the change in impressions and cost-per-impression on Google Network Members' properties and the correlation between these items, have been affected and may continue to be affected by various factors, including:

- advertiser competition for keywords;
- changes in advertising quality, formats, delivery or policy; usage, primarily

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- changes in device mix;
- changes in foreign currency exchange rates;
- fees advertisers are willing to pay based on how they manage their advertising costs;
- general economic conditions including the impact of COVID-19;
- seasonality; and
- traffic growth in emerging markets compared to more mature markets and across various advertising verticals and channels.

Our advertising revenue growth rate has been affected over time as a result of a number of factors, including challenges in maintaining our growth rate as revenues increase to higher levels; changes in our product mix; changes in advertising quality or formats and delivery; the evolution of the online advertising market; increasing competition; our investments in new business strategies; query growth rates; and shifts in the geographic mix of our revenues. We also expect that our revenue growth rate will continue to be affected by evolving user preferences, the acceptance by users of our products and services as they are delivered on diverse devices and modalities, our ability to create a seamless experience for both users and advertisers, and movements in foreign currency exchange rates.

Google advertising revenues consist primarily of the following:

- Google Search & other consists of revenues generated on Google search properties (including revenues from traffic generated by search distribution partners who use Google.com as their default search in browsers, toolbars, etc.) and other Google owned and operated properties like Gmail, Google Maps, and Google Play;
- YouTube ads consists of revenues generated on YouTube properties; and
- Google Network Members' properties consist of revenues generated on Google Network Members' properties participating in AdMob, AdSense, and Google Ad Manager.

Google Search & other

Google Search & other revenues increased \$5,947 million from 2019 to 2020. The overall growth was primarily driven by interrelated factors including increases in search queries resulting from ongoing growth in user adoption and usage, primarily on mobile devices, growth in advertiser spending, primarily in the second half of the year, and improvements we have made in ad formats and delivery. This increase was partially offset by a decline in advertiser spending primarily in The adverse effect of COVID-19 on 2020 revenues also contributed to the first half of the year driven by the impact of COVID-19, year-over-year increase.

YouTube ads

YouTube ads revenues increased \$4,623 million \$9.1 billion from 2019 2020 to 2020, 2021. Growth was primarily driven by our direct response and brand advertising products. Growth for our direct response advertising products which benefited from was primarily driven by increased advertiser spending as well as improvements to ad formats and delivery and increased advertiser spending. Brand delivery. Growth for our brand advertising products also contributed to growth despite revenues being adversely impacted by a decline in advertiser spending was primarily in the first half of the year driven by increased spending by our advertisers and the impact adverse effect of COVID-19, COVID-19 on 2020 revenues.

Google Network

Google Network Members' properties

Google Network Members' properties revenues increased \$1,543 million \$8.6 billion from 2019 2020 to 2020, 2021. The growth was primarily driven by strength in AdMob, and Google Ad Manager. Manager, and AdSense. The adverse effect of COVID-19 on 2020 revenues also contributed to the year-over-year increase.

Use of Monetization Metrics

Paid clicks for our Google Search & other properties represent engagement by users and include clicks on advertisements by end-users on Google search properties and other owned and operated properties including Gmail, Google Maps, and Google Play. Historically, we included certain viewed YouTube engagement ads and the related revenues in our paid clicks and cost-per-click monetization metrics. Over time, advertising on YouTube has expanded to multiple advertising formats and the type of viewed engagement ads historically included in paid clicks and cost-per-click metrics have increasingly covered a smaller portion of YouTube advertising revenues. As a result, we removed these ads and the related revenues from the paid clicks and cost-per-click metrics for the current and historical periods presented. The revised metrics provide a better understanding of monetization trends on the properties included within Google Search & other, as they now more closely correlate with the related changes in revenues.

Impressions for our Google Network Members' properties include impressions displayed to users served on Google Network Members' properties participating primarily in AdMob, AdSense and Google Ad Manager.

Cost-per-click is defined as click-driven revenues divided by our total number of paid clicks and represents the average amount we charge advertisers for each engagement by users.

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Cost-per-impression is defined as impression-based and click-based revenues divided by our total number of impressions and represents the average amount we charge advertisers for each impression displayed to users.

As our business evolves, we periodically review, refine and update our methodologies for monitoring, gathering, and counting the number of paid clicks on our Google Search & other properties and the number of impressions on Google Network Members' properties and for identifying the revenues generated by click activity on our Google Search & other properties and the revenues generated by impression activity on Google Network Members' properties.

Paid clicks and cost-per-click

The following table presents changes in our paid clicks and cost-per-click (expressed as a percentage):

	Year Ended December 31,	
	2019	2020
Paid clicks change	23 %	19 %
Cost-per-click change	(6)%	(10)%

Paid clicks increased from 2019 2020 to 2020 primarily due to an increase in clicks due to interrelated factors, resulting from ongoing growth in user adoption and usage, primarily on mobile devices; continued growth in advertiser activity; and improvements we have made in ad formats and delivery. Growth was also driven by an increase in clicks relating to ads on Google Play. The positive effect on our revenues from an increase in paid clicks was partially offset by a decrease in the cost-per-click paid by our advertisers. The decrease in cost-per-click was primarily driven by reduced advertiser spending in response to COVID-19 primarily during the first half of the year. The decrease in cost-per-click was also affected by changes in device mix, geographic mix, ongoing product changes, product mix, property mix, and fluctuations of the U.S. dollar compared to certain foreign currencies.

Paid clicks increased from 2018 to 2019 primarily due to an increase in clicks due to interrelated factors, including an increase in search queries resulting from ongoing growth in user adoption and usage, primarily on mobile devices; continued growth in advertiser activity; and improvements we have made in ad formats and delivery. Growth was also driven by an increase in clicks relating to ads on Google Play. The positive effect on our revenues from an increase in paid clicks was partially offset by a decrease in the cost-per-click paid by our advertisers. The decrease in cost-per-click was driven by changes in device mix, geographic mix, ongoing product changes, product mix, property mix, and fluctuations of the U.S. dollar compared to certain foreign currencies.

Impressions and cost-per-impression

The following table presents changes in our impressions and cost-per-impression (expressed as a percentage): 2021:

	Year Ended December 31,
	2021
Paid clicks change	23 %
Cost-per-click change	15 %

Paid clicks increased from 2020 to 2021 driven by a number of interrelated factors, including an increase in search queries resulting from growth in user adoption and usage, primarily on mobile devices; an increase in clicks relating to ads on Google Play; growth in advertiser spending; and improvements we have made in ad formats and delivery. The adverse effect of COVID-19 on 2020 paid clicks also contributed to the increase.

The increase in cost-per-click from 2020 to 2021 was driven by a number of interrelated factors including changes in device mix, geographic mix, growth in advertiser spending, ongoing product changes, and property mix, as well as the adverse effect of COVID-19 in 2020.

Impressions and cost-per-impression

The following table presents changes in impressions and cost-per-impression (expressed as a percentage) from 2020 to 2021:

	Year Ended December 31,
	2021
Impressions change	152 %
Cost-per-impression change	(8) 35 %

Impressions increased from 2019 2020 to 2020 2021 primarily due to driven by growth in Google Ad Manager. The positive effect on our revenues from an increase in impressions was AdMob, partially offset by a decrease decline in the impressions related to AdSense. The increase in cost-per-impression paid by our advertisers which was primarily driven by a reduction the adverse effect of COVID-19 in advertiser spending in response to COVID-19, primarily during the first half of the year, 2020 as well as the effect of a combination of interrelated factors including ongoing product and policy changes and improvements we have made in ad formats and delivery, changes in device mix, geographic mix, product mix, and property mix, and fluctuations of the U.S. dollar compared to certain foreign currencies. mix.

Google other revenues

Google other revenues consist increased \$6.3 billion from 2020 to 2021. The growth was primarily driven by YouTube non-advertising and hardware, followed by Google Play. Growth for YouTube non-advertising was primarily due to an increase in paid subscribers. Growth in hardware reflects the inclusion of Fitbit revenues, from:

- as the acquisition closed in January 2021, and an increase in phone sales. Growth for Google Play which includes revenues from was primarily driven by sales of apps and in-app purchases (which we recognize net of payout to developers) and digital content sold in the Google Play store;
- hardware, including Google Nest home products, Pixelbooks, Pixel phones and other devices;
- YouTube non-advertising, including YouTube Premium and YouTube TV subscriptions and other services; and
- other products and services. purchases.

Google other revenues increased \$4,697 million from 2019 to 2020. The growth was primarily driven by Google Play and YouTube non-advertising. Growth for Google Play was primarily driven by sales of apps and in-app purchases, which benefited from elevated user engagement partially due to the impact of COVID-19. Growth for YouTube non-advertising was primarily driven by an increase in paid subscribers.

Over time, our growth rate for Google other revenues may be affected by the seasonality associated with new product and service launches as well as market dynamics.

Google Cloud

Our Google Cloud revenues increased \$4,141 million \$6.1 billion from 2019 2020 to 2020, 2021. The growth was primarily driven by GCP followed by our Google Workspace offerings. Our Google Cloud's infrastructure and our data and analytics platform products services were the largest drivers of growth in GCP.

Over time, our growth rate for Google Cloud revenues may be affected by customer usage, market dynamics, as well as new product and service launches.

Revenues by Geography

The following table presents our revenues by geography as a percentage of revenues, determined based on the addresses of our customers:

The following table presents our revenues by geography as a percentage of revenues, determined based on the addresses of our customers.										
		Year Ended December 31,					Year Ended December 31,			
		2019		2020			2020		2021	
United States	United States	46	%	47	%	United States	47	%	46	%
EMEA	EMEA	31	%	30	%	EMEA	30	%	31	%
APAC	APAC	17	%	18	%	APAC	18	%	18	%
Other Americas	Other Americas	6	%	5	%	Other Americas	5	%	5	%

For further details on revenues by geography, see Note 2 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K.

Use of Constant Currency Revenues and Constant Currency Revenue Percentage Change

The effect of currency exchange rates on our business is an important factor in understanding period to period comparisons. Our international revenues are favorably affected as the U.S. dollar weakens relative to other foreign currencies, and unfavorably affected as the U.S. dollar strengthens relative to other foreign currencies. Our revenues are also favorably affected by net hedging gains and unfavorably affected by net hedging losses.

We use non-GAAP constant currency revenues and non-GAAP percentage change in constant currency revenues for financial and operational decision-making and as a means to evaluate period-to-period comparisons. We believe the presentation of results on a constant currency basis in addition to U.S. Generally Accepted Accounting Principles ("GAAP") (GAAP) results helps improve the ability to understand our performance because they exclude it excludes the effects of foreign currency volatility that are not indicative of our core operating results.

Constant currency information compares results between periods as if exchange rates had remained constant period over period. We define constant currency revenues as total revenues excluding the effect of foreign exchange rate movements and hedging activities, and use it to determine the constant currency revenue percentage change on a year-on-year basis. Constant currency revenues are calculated by translating current period revenues using prior year comparable period exchange rates, as well as excluding any hedging effects realized in the current period.

Constant currency revenue percentage change is calculated by determining the change in current period revenues over prior year comparable period revenues where current period foreign currency revenues are translated using prior year comparable period exchange rates and hedging effects are excluded from revenues of both periods.

These results should be considered in addition to, not as a substitute for, results reported in accordance with GAAP. Results on a constant currency basis, as we present them, may not be comparable to similarly titled measures used by other companies and are not a measure of performance presented in accordance with GAAP.

The following table presents the foreign exchange effect on our international revenues and total revenues (in millions, except percentages):

	Year Ended December 31,			
	2019		2020	
EMEA revenues	\$	50,645	\$	55,370
Exclude foreign exchange effect on current period revenues using prior year rates		2,397		(111)
EMEA constant currency revenues	\$	53,042	\$	55,259
Prior period EMEA revenues	\$	44,739	\$	50,645
EMEA revenue percentage change		13 %		9 %
EMEA constant currency revenue percentage change		19 %		9 %
APAC revenues	\$	26,928	\$	32,550
Exclude foreign exchange effect on current period revenues using prior year rates		388		11
APAC constant currency revenues	\$	27,316	\$	32,561
Prior period APAC revenues	\$	21,341	\$	26,928

APAC revenue percentage change		26 %	21 %
APAC constant currency revenue percentage change		28 %	21 %
Other Americas revenues	\$	8,986	\$ 9,417
Exclude foreign exchange effect on current period revenues using prior year rates		541	964
Other Americas constant currency revenues	\$	9,527	\$ 10,381
Prior period Other Americas revenues	\$	7,608	\$ 8,986
Other Americas revenue percentage change		18 %	5 %
Other Americas constant currency revenue percentage change		25 %	16 %
United States revenues	\$	74,843	\$ 85,014
United States revenue percentage change		18 %	14 %
Hedging gains (losses)		455	176
Total revenues	\$	161,857	\$ 182,527
Total constant currency revenues	\$	164,728	\$ 183,215
Prior period revenues, excluding hedging effect ⁽¹⁾	\$	136,957	\$ 161,402
Total revenue percentage change		18 %	13 %
Total constant currency revenue percentage change		20 %	14 %

(1) Total revenues and hedging gains (losses) for the year ended December 31, 2018 were \$136,819 million and \$(138) million, respectively.

	Year Ended December 31,		% Change from Prior Year
	2020	2021	
EMEA revenues	\$ 55,370	\$ 79,107	43 %
EMEA constant currency revenues		76,321	38 %
APAC revenues	32,550	46,123	42 %
APAC constant currency revenues		45,666	40 %
Other Americas revenues	9,417	14,404	53 %
Other Americas constant currency revenues		14,317	52 %
United States revenues	85,014	117,854	39 %
Hedging gains (losses)	176	149	
Total revenues	\$ 182,527	\$ 257,637	41 %
Revenues, excluding hedging effect	\$ 182,351	\$ 257,488	
Exchange rate effect		(3,330)	
Total constant currency revenues		\$ 254,158	39 %

EMEA revenue percentage change growth from 2019 2020 to 2020 2021 was not significantly favorably affected by foreign currency exchange rates, primarily due to the U.S. dollar weakening relative to the Euro offset by the U.S. dollar strengthening relative to the Turkish lira and Russian ruble, British pound.

APAC revenue percentage change growth from 2019 2020 to 2020 2021 was not significantly favorably affected by foreign currency exchange rates, primarily due to the U.S. dollar strengthening weakening relative to the Indian rupee, Australian dollar, partially offset by the U.S. dollar weakening strengthening relative to the Japanese yen.

Other Americas revenue percentage growth change from 2019 2020 to 2020 2021 was unfavorably favorably affected by changes in foreign currency exchange rates, primarily due to the U.S. dollar weakening relative to the Canadian dollar, partially offset by the U.S. dollar strengthening relative to the Argentine peso and the Brazilian real real.

Costs and Argentine peso. Expenses

Cost of Revenues

The following tables present cost of revenues, including TAC (in millions, except percentages):

	Year Ended December 31,	
	2020	2021
TAC	\$ 32,778	\$ 45,566
Other cost of revenues	51,954	65,373

Total cost of revenues	\$ 84,732	\$ 110,939
Total cost of revenues as a percentage of revenues	46.4 %	43.1 %

Cost of revenues increased \$26.2 billion from 2020 to 2021. The increase was due to an increase in other cost of revenues and TAC of \$13.4 billion and \$12.8 billion, respectively.

The increase in TAC from 2020 to 2021 was due to an increase in TAC paid to distribution partners and to Google Network partners, primarily driven by growth in revenues subject to TAC. The TAC rate decreased from 22.3% to 21.8% from 2020 to 2021 primarily due to a revenue mix shift from Google Network properties to Google Search & other properties. The TAC rate on Google Search & other properties revenues and the TAC rate on Google Network revenues were both substantially consistent from 2020 to 2021.

The increase in other cost of revenues from 2020 to 2021 was driven by increases in content acquisition costs primarily for YouTube, data center and other operations costs, and hardware costs. The increase in data center and

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Costs and Operating Expenses

Cost of Revenues

Cost of revenues includes TAC which are paid to our distribution partners who make available our search access points and services, and amounts paid to Google Network Members primarily for ads displayed on their properties. Our distribution partners include browser providers, mobile carriers, original equipment manufacturers, and software developers.

The cost of revenues as a percentage of revenues generated from ads placed on Google Network Members' properties are significantly higher than the cost of revenues as a percentage of revenues generated from ads placed on Google properties (which includes Google Search & other and YouTube ads), because most of the advertiser revenues from ads served on Google Network Members' properties are paid as TAC to our Google Network Members.

Additionally, other cost of revenues (which is the cost of revenues excluding TAC) includes the following:

- Content acquisition costs primarily related to payments to content providers from whom we license video and other content for distribution on YouTube advertising and subscription services and Google Play (we pay fees to these content providers based on revenues generated or a flat fee);
- Expenses associated with our data centers (including bandwidth, compensation expenses including stock-based compensation ("SBC"), depreciation, energy, and other equipment costs) as well as other operations costs (such as content review and customer support costs). These costs are generally less variable in nature and may not correlate with related changes in revenues; and
- Inventory related costs for hardware we sell.

The following tables present our cost of revenues, including TAC (in millions, except percentages):

	Year Ended December 31,	
	2019	2020
TAC	\$ 30,089	\$ 32,778
Other cost of revenues	41,807	51,954
Total cost of revenues	\$ 71,896	\$ 84,732
Total cost of revenues as a percentage of revenues	44.4 %	46.4 %

Cost of revenues increased \$12,836 million from 2019 to 2020. The increase was due to increases in other cost of revenues and TAC of \$10,147 million and \$2,689 million, respectively.

The increase in other cost of revenues from 2019 to 2020 was due to an increase in data center and other operations costs and an increase in content acquisition costs primarily for YouTube. This increase was partially offset by a decline reduction in hardware costs.

The increase in TAC from 2019 to 2020 was depreciation expense due to increases the change in TAC paid to distribution partners the estimated useful life of our servers and to Google Network Members, driven by growth certain network equipment beginning in revenues subject to TAC. The TAC rate was 22.3% in both 2019 and 2020. The TAC rate on Google properties revenues and the TAC rate on Google Network revenues were both substantially consistent from 2019 to 2020, first quarter of 2021.

Over time, cost of revenues as a percentage of total revenues may be affected by a number of factors, including the following:

- The amount of TAC paid to distribution partners, which is affected by changes in device mix, geographic mix, partner mix, partner agreement terms such as revenue share arrangements, and the percentage of queries channeled through paid access points;
- The amount of TAC paid to Google Network Members, which is affected by a combination of factors such as geographic mix, product mix, and revenue share terms;
- Relative revenue growth rates of Google properties and Google Network Members' properties;
- Certain costs that are less variable in nature and may not correlate with the related revenues;
- Costs associated with our data centers and other operations to support ads, Google Cloud, Search, YouTube and other products;
- Content acquisition costs, which are primarily affected by the relative growth rates in our YouTube advertising and subscription revenues;
- Costs related to hardware sales; and
- Increased proportion of non-advertising revenues, which generally have higher costs of revenues, relative to our advertising revenues.

Research and Development

The following table presents our R&D expenses (in millions, except percentages):

	Year Ended December 31,	
	2019	2020
Research and development expenses	\$ 26,018	\$ 27,573
Research and development expenses as a percentage of revenues	16.1 %	15.1 %

R&D expenses consist primarily of:

- Compensation expenses (including SBC) for engineering and technical employees responsible for R&D of our existing and new products and services;
- Depreciation expenses;
- Equipment-related expenses; and
- Professional services fees primarily related to consulting and outsourcing services.

	Year Ended December 31,	
	2020	2021
Research and development expenses	\$ 27,573	\$ 31,562
Research and development expenses as a percentage of revenues	15.1 %	12.3 %

R&D expenses increased \$1,555 million \$4.0 billion from 2019 2020 to 2020, 2021. The increase was primarily due to an increase in compensation expenses of \$1,619 million \$3.5 billion, largely resulting from a an 11% increase in headcount, and partially offset by higher compensation charges in certain Other Bets in 2019. Additionally, the an increase in R&D expenses professional service fees of \$516 million. This increase was partially offset by a decrease reduction in travel depreciation expense of \$450 million including the effect of our change in the estimated useful life of our servers and entertainment expenses of \$383 million. certain network equipment.

Over time, R&D expenses as a percentage of revenues may fluctuate due to certain expenses that are generally less variable in nature and may not correlate to the changes in revenues. In addition, R&D expenses may be affected by a number of factors including continued investment in ads, Android, Chrome, Google Cloud, Google Play, hardware, machine learning, Other Bets, Search and YouTube.

Sales and Marketing

The following table presents our sales and marketing expenses (in millions, except percentages):

	Year Ended December 31,			Year Ended December 31,	
	2019	2020		2020	2021
Sales and marketing expenses	\$ 18,464	\$ 17,946	Sales and marketing expenses	\$ 17,946	\$ 22,912
Sales and marketing expenses as a percentage of revenues	11.4 %	9.8 %	Sales and marketing expenses as a percentage of revenues	9.8 %	8.9 %

Sales and marketing expenses consist increased \$5.0 billion from 2020 to 2021, primarily of:

- Advertising and promotional expenditures related to our products and services; and
- Compensation expenses (including SBC) for employees engaged in sales and marketing, sales support, and certain customer service functions.

Sales and marketing expenses decreased \$518 million from 2019 to 2020. The decrease was primarily due to a decrease driven by an increase in advertising and promotional expenses activities of \$1,395 million, as we reduced spending \$2.5 billion and paused or rescheduled campaigns and changed some events to digital-only formats as a result of COVID-19, and a decrease in travel and entertainment expenses of \$371 million. The decrease was partially offset by an increase in compensation expenses of \$1,347 million, \$2.2 billion. The increase in advertising and promotional activities was driven by both increased spending in the current period and a reduction in spending in 2020 due to COVID-19. The increase in compensation expenses was largely resulting from an 8% due to a 14% increase in headcount.

Over time, sales and marketing expenses as a percentage of revenues may fluctuate due to certain expenses that are generally less variable in nature and may not correlate to the changes in revenues. In addition, sales and marketing expenses may be affected by a number of factors including the seasonality associated with new product and service launches and strategic decisions regarding the timing and extent of our spending.

General and Administrative

The following table presents our general and administrative expenses (in millions, except percentages):

	Year Ended December 31,			Year Ended December 31,	
	2019	2020		2020	2021
General and administrative expenses	\$ 9,551	\$ 11,052	General and administrative expenses	\$ 11,052	\$ 13,510

General and administrative expenses as a percentage of revenues	General and administrative expenses as a percentage of revenues	5.9	%	6.1	%	General and administrative expenses as a percentage of revenues	6.1	%	5.2	%
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General and administrative expenses consist increased \$2.5 billion from 2020 to 2021. The increase was primarily of:

- Compensation driven by a \$1.7 billion increase in charges relating to legal matters and a \$664 million increase in compensation expenses, (including SBC) largely resulting from a 14% increase in headcount. These increases were partially offset by a reduction in expense of \$808 million related to a decline in allowance for employees in our finance, human resources, information technology, and legal organizations;
- Depreciation; credit losses for accounts receivable, as 2020 reflected a higher allowance related to the economic effect of COVID-19.

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• Equipment-related expenses;

- Legal-related expenses; and
- Professional services fees primarily related to audit, information technology consulting, outside legal, and outsourcing services.

General and administrative expenses increased \$1,501 million from 2019 to 2020. The increase was primarily due to an increase in compensation expenses of \$887 million, largely resulting from a 16% increase in headcount. In addition, there was an increase of \$440 million related to allowance for credit losses for accounts receivable. The increase was partially offset by a \$554 million charge recognized in 2019 relating to a legal settlement.

Over time, general and administrative expenses as a percentage of revenues may fluctuate due to certain expenses that are generally less variable in nature and may not correlate to the changes in revenues, the effect of discrete items such as legal settlements, or allowances for credit losses for accounts receivable.

European Commission Fines

In March 2019, the EC announced its decision that certain contractual provisions in agreements that Google had with AdSense for Search partners infringed European competition law. The EC decision imposed a €1.5 billion (\$1.7 billion as of March 20, 2019) fine, which was accrued in the first quarter of 2019.

Please refer to Note 10 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K for further information.

Segment Profitability

The following table presents our segment operating income (loss) (in millions). For comparative purposes, amounts in prior periods have been recast.

		Year Ended December 31,				Year Ended December 31,	
		2018	2019	2020		2020	2021
Operating income (loss):	Operating income (loss):				Operating income (loss):		
Google Services	Google Services	\$ 43,137	\$ 48,999	\$ 54,606	Google Services	\$ 54,606	\$ 91,855
Google Cloud	Google Cloud	(4,348)	(4,645)	(5,607)	Google Cloud	(5,607)	(3,099)
Other Bets	Other Bets	(3,358)	(4,824)	(4,476)	Other Bets	(4,476)	(5,281)
Corporate costs, unallocated ⁽¹⁾	Corporate costs, unallocated ⁽¹⁾	(7,907)	(5,299)	(3,299)	Corporate costs, unallocated ⁽¹⁾	(3,299)	(4,761)
Total income from operations	Total income from operations	\$ 27,524	\$ 34,231	\$ 41,224	Total income from operations	\$ 41,224	\$ 78,714

(1) Corporate Unallocated corporate costs unallocated includes a fine of \$5.1 billion for the year ended December 31, 2018 and a fine primarily include corporate initiatives, corporate shared costs, such as finance and legal, settlement totaling \$2.3 billion for the year ended December 31, 2019, including certain fines and settlements, as well as costs associated with certain shared R&D activities. Additionally, hedging gains (losses) related to revenue are included in corporate costs.

Google Services

Google services operating income increased \$5,607 million \$37.2 billion from 2019 2020 to 2020, 2021. The increase was primarily driven by an increase in revenues partially offset by increases in content acquisition costs primarily for YouTube, data center and other operations costs, and TAC. Additionally, there was an increase in operating expenses primarily driven by an increase in compensation expenses (including SBC) largely due to increases in headcount. Operating income benefited from a decline in hardware costs.

Google services operating income increased \$5,862 million from 2018 to 2019. The increase was primarily driven by an increase growth in revenues partially offset by increases in TAC, data center and other operations costs, and content acquisition costs, primarily for YouTube. Additionally, there compensation expenses, advertising and promotional expenses, and charges related to certain legal matters. The increase in expenses was an partially offset by a reduction in costs driven by the change in the estimated useful life of our servers and certain network equipment. The effect of COVID-19 on 2020 results affected the year-over-year increase in operating expenses primarily driven by an increase in compensation expenses (including SBC) largely due to an increase in headcount, income.

Google Cloud

Google Cloud operating loss increased \$962 million decreased \$2.5 billion from 2019 2020 to 2020 and increased \$297 million from 2018 to 2019, 2021. The increase decrease in operating loss was primarily driven by growth in both periods was driven revenues, partially offset by an increase in total expenses, of \$5,103 million from 2019 to 2020 and \$3,377 million from 2018 to 2019. Operating expenses increased primarily due to compensation expenses (including SBC), largely driven by an compensation expenses. The increase in headcount. Additionally, data center expenses was partially offset by a reduction in costs driven by the change in the estimated useful life of our servers and other operating costs increased in both periods, certain network equipment.

Other Bets

Other Bets operating loss decreased \$348 million increased \$805 million from 2019 2020 to 2020 and increased \$1,466 million from 2018 to 2019, 2021. The fluctuations were increase in operating loss was primarily driven by increases in compensation expenses, (including SBC), including an increase in valuation-based compensation charges during the second quarter of 2021.

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Other Income (Expense), Net

The following table presents other income (expense), net, (in millions):

	Year Ended December 31,	
	2019	2020
Other income (expense), net	\$ 5,394	\$ 6,858

	Year Ended December 31,	
	2020	2021
Other income (expense), net	\$ 6,858	\$ 12,020

Other income (expense), net, increased \$1,464 million \$5.2 billion from 2019 2020 to 2020, 2021. The change increase was primarily driven by an increase increases in net unrealized gains on recognized for our marketable and non-marketable equity and debt securities of \$3,519 million \$6.9 billion, partially offset by a \$902 million loss resulting from our equity derivatives, which hedged the changes an increase in fair value accrued performance fees related to certain investments of certain marketable equity securities, and a decrease in interest income of \$562 million \$1.3 billion.

Over time, other income (expense), net, may be affected by market dynamics and other factors. Equity values generally change daily for marketable equity securities and upon the occurrence of observable price changes or upon impairment of non-marketable equity securities. In addition, volatility in the global economic climate and financial markets, including the effects of COVID-19, could result in a significant change in the value of our investments. Fluctuations in the value of these investments has, and we expect will continue to, contribute to volatility of OI&E in future periods. For additional information about our investments, see Note 1 and See Note 3 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K, 10-K for further information.

Provision for Income Taxes

The following table presents our provision for income taxes (in millions, except for effective tax rate):

		Year Ended December 31,			Year Ended December 31,	
		2019	2020		2020	2021
Provision for income taxes	Provision for income taxes	\$ 5,282	\$ 7,813	Provision for income taxes	\$ 7,813	\$ 14,701
Effective tax rate	Effective tax rate	13.3 %	16.2 %	Effective tax rate	16.2 %	16.2 %

Our The provision for income taxes and our effective tax rate increased from 2019 2020 to 2020. The increase in the provision for income taxes and our effective tax rate is 2021, primarily due to benefits related to the resolution of multi-year audits an increase in 2019 that did not recur in 2020, higher pre-tax earnings, including in countries that have higher statutory rates, resulting from the change in our corporate legal entity structure implemented as of December 31, 2019, and an increase in valuation allowance for net deferred tax assets that are not likely to be realized relating to certain of our Other Bets, partially offset by an increase in the stock-based compensation related tax benefit, and the U.S. federal Foreign-Derived Intangible Income tax deduction benefits.

See Note 14 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K for further information.

We expect our future benefit. Our effective tax rate to be affected by the geographic mix of earnings in countries with different statutory rates. Additionally, our future effective tax rate may be affected by changes in the valuation of our deferred tax assets or liabilities, or changes in tax laws, regulations, or accounting principles, as well as certain discrete items.

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Quarterly Results was substantially consistent from 2020 to 2021. See Note 14 of Operations

The following tables presenting our quarterly results of operations should be read in conjunction with the consolidated financial statements and related notes Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K. We have prepared the unaudited information on the same basis as our audited consolidated financial statements. Our operating results 10-K for any quarter are not necessarily indicative of results for any future quarters or for a full year.

The following table presents our unaudited quarterly results of operations for the eight quarters ended December 31, 2020. This table includes all adjustments, consisting only of normal recurring adjustments, that we consider necessary for a fair presentation of our consolidated financial position and operating results for the quarters presented. Seasonal fluctuations in internet usage and advertiser expenditures, underlying business trends such as traditional retail seasonality and macroeconomic conditions have affected, and are likely to continue to affect, our business (including developments and volatility arising from COVID-19). Commercial queries typically increase significantly in the fourth quarter of each year. These seasonal trends have caused, and will likely continue to cause, fluctuations in our quarterly results, including fluctuations in sequential revenue growth rates.

	Quarter Ended							
	Mar 31, 2019	Jun 30, 2019	Sept 30, 2019	Dec 31, 2019	Mar 31, 2020	Jun 30, 2020	Sept 30, 2020	Dec 31, 2020
(In millions, except per share amounts) (unaudited)								
Consolidated Statements of Income Data:								
Revenues	\$ 36,339	\$ 38,944	\$ 40,499	\$ 46,075	\$ 41,159	\$ 38,297	\$ 46,173	56,898
Costs and expenses:								
Cost of revenues	16,012	17,296	17,568	21,020	18,982	18,553	21,117	26,080
Research and development	6,029	6,213	6,554	7,222	6,820	6,875	6,856	7,022
Sales and marketing	3,905	4,212	4,609	5,738	4,500	3,901	4,231	5,314
General and administrative	2,088	2,043	2,591	2,829	2,880	2,585	2,756	2,831
European Commission fines	1,697	0	0	0	0	0	0	0
Total costs and expenses	29,731	29,764	31,322	36,809	33,182	31,914	34,960	41,247
Income from operations	6,608	9,180	9,177	9,266	7,977	6,383	11,213	15,651
Other income (expense), net	1,538	2,967	(549)	1,438	(220)	1,894	2,146	3,038
Income before income taxes	8,146	12,147	8,628	10,704	7,757	8,277	13,359	18,689
Provision for income taxes	1,489	2,200	1,560	33	921	1,318	2,112	3,462
Net income	\$ 6,657	\$ 9,947	\$ 7,068	\$ 10,671	\$ 6,836	\$ 6,959	\$ 11,247	15,227
Basic net income per share of Class A and B common stock and Class C capital stock	\$ 9.58	\$ 14.33	\$ 10.20	\$ 15.49	\$ 9.96	\$ 10.21	\$ 16.55	22.54
Diluted net income per share of Class A and B common stock and Class C capital stock	\$ 9.50	\$ 14.21	\$ 10.12	\$ 15.35	\$ 9.87	\$ 10.13	\$ 16.40	22.30

further information.

Financial Condition

Cash, Cash Equivalents, and Marketable Securities

As of December 31, 2020 December 31, 2021, we had \$136.7 billion \$139.6 billion in cash, cash equivalents, and short-term marketable securities. Cash equivalents and marketable securities are comprised of time deposits, money market funds, highly liquid government bonds, corporate debt securities, mortgage-backed and asset-backed securities, and marketable equity securities.

Sources, Uses of Cash and Related Trends

Our principal sources of liquidity are our cash, cash equivalents, and marketable securities, as well as the cash flow that we generate from our operations. The primary use of capital continues to be to invest for the long term long-term growth of the business. We regularly evaluate our cash and capital structure, including the size, pace and form of capital return to stockholders.

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The following table presents our cash flows (in millions):

	Year Ended December 31,	
	2019	2020
Net cash provided by operating activities	\$ 54,520	\$ 65,124

Net cash used in investing activities	\$	(29,491)	\$	(32,773)
Net cash used in financing activities	\$	(23,209)	\$	(24,408)

	Year Ended December 31,			
	2020		2021	
Net cash provided by operating activities	\$	65,124	\$	91,652
Net cash used in investing activities	\$	(32,773)	\$	(35,523)
Net cash used in financing activities	\$	(24,408)	\$	(61,362)

Cash Provided by Operating Activities

Our largest source of cash provided by our operations are advertising revenues generated by Google Search & other properties, Google Network Members' properties, and YouTube ads. Additionally, we generate cash through sales of apps and in-app purchases, digital content products, and hardware; and licensing and service fees including fees received for Google Cloud offerings and subscription-based products.

Our primary uses of cash from our operating activities include payments to distribution and Google Network partners, for compensation and related costs, payments to our distribution partners and Google Network Members, and payments for content acquisition costs. In addition, uses of cash from operating activities include hardware inventory costs, income taxes, and other general corporate expenditures.

Net cash provided by operating activities increased from 2019 2020 to 2020 2021 primarily due to the net effect of increases an increase in cash received from revenues and cash paid for cost of revenues and operating expenses, and changes in operating assets and liabilities.

Cash Used in Investing Activities

Cash provided by investing activities consists primarily of maturities and sales of our investments in marketable and non-marketable securities. Cash used in investing activities consists primarily of purchases of marketable and non-marketable securities, purchases of property and equipment, and payments for acquisitions.

Net cash used in investing activities increased from 2019 2020 to 2020 2021 primarily due to a net decrease in maturities and sales of marketable securities, an increase in purchases of securities, partially offset by decreases in payments for acquisitions and purchases of property and equipment. The net decrease in purchases of property and equipment, was driven offset by decreases a decrease in purchases of land and buildings for offices as well as data center construction, partially offset by increases in purchases of servers, non-marketable securities.

Cash Used in Financing Activities

Cash provided by financing activities consists primarily of proceeds from issuance of debt and proceeds from the sale of interest in consolidated entities. Cash used in financing activities consists primarily of repurchases of common and capital stock, net payments related to stock-based award activities, and repayments of debt.

Net cash used in financing activities increased from 2019 2020 to 2020 2021 primarily due to repayment of debt and an increase in cash payments for repurchases of common and capital stock, partially offset by increases in net proceeds from issuance of debt and proceeds from the sale of interest in consolidated entities. stock.

Liquidity and Material Cash Requirements

We expect existing cash, cash equivalents, short-term marketable securities, cash flows from operations and financing activities to continue to be sufficient to fund our operating activities and cash commitments for investing and financing activities for at least the next 12 months and thereafter for the foreseeable future.

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Capital Expenditures and Leases

We make investments in land and buildings for data centers and offices and information technology assets through purchases of property and equipment and lease arrangements to provide capacity for the growth of our services and products.

Capital Expenditures

Our capital investments in property and equipment consist primarily of the following major categories:

- technical infrastructure, which consists of our investments in servers and network equipment for computing, storage and networking requirements for ongoing business activities, including machine learning (collectively referred to as our information technology assets) and data center land and building construction; and
- office facilities, ground up development projects and related building improvements.

Construction in progress consists primarily of technical infrastructure and office facilities which have not yet been placed in service for our intended use. The time frame from date of purchase to placement in service of these assets may extend from months to years. For example, our data center construction projects are generally multi-year projects with multiple phases, where we acquire qualified land and buildings, construct buildings, and secure and install information technology assets.

During the years ended December 31, 2020 and 2021, we spent \$22.3 billion and \$24.6 billion on capital expenditures, respectively. Depreciation of our property and equipment commences when the deployment of such assets are completed and are ready for our intended use. Land is not depreciated. For the years ended December 31, 2020 and 2021, our depreciation and impairment expenses on property and equipment were \$12.9 billion and \$11.6 billion, respectively.

Leases

For the years ended December 31, 2020 and 2021, we recognized total operating lease assets of \$2.8 billion and \$3.0 billion, respectively. As of December 31, 2021, the amount of total future lease payments under operating leases, which had a weighted average remaining lease term of 8 years, was \$15.5 billion, of which \$2.5 billion is short-term. As of December 31, 2021, we have entered into leases that have not yet commenced with future short-term and long-term lease payments of \$606 million and \$5.2 billion, excluding purchase options, that are not yet recorded on our Consolidated Balance Sheets. These leases will commence between 2022 and 2026 with non-cancelable lease terms of 1 to 25 years.

For the years ended December 31, 2020 and 2021, our operating lease expenses (including variable lease costs) were \$2.9 billion and \$3.4 billion, respectively. Finance lease costs were not material for the years ended December 31, 2020 and 2021. See Note 4 of the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K for further information on leases.

Financing

We have a short-term debt financing program of up to \$10.0 billion through the issuance of commercial paper, which increased from \$5.0 billion in September 2021. Net proceeds from this program are used for general corporate purposes. As of December 31, 2021, we had no commercial paper outstanding.

As of December 31, 2021, we had \$10.0 billion of revolving credit facilities with no amounts outstanding. In April 2021, we terminated the existing revolving credit facilities, which were scheduled to expire in July 2023, and entered into two new revolving credit facilities in the amounts of \$4.0 billion and \$6.0 billion, which will expire in April 2022 and April 2026, respectively. The interest rates for the new credit facilities are determined based on a formula using certain market rates, as well as our progress toward the achievement of certain sustainability goals. No amounts have been borrowed under the new credit facilities.

As of December 31, 2021, we have senior unsecured notes outstanding with a total carrying value of \$12.8 billion with short-term and long-term taxes payable future interest payments of \$6.5 billion related to a one-time transition tax payable incurred as a result \$231 million and \$4.0 billion, respectively. See Note 6 of the U.S. Tax Cuts Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K for further information on our debt.

Share Repurchase Program

In April 2021, the Board of Directors of Alphabet authorized the company to repurchase up to \$50.0 billion of its Class C stock. In July 2021, the Alphabet board approved an amendment to the April 2021 authorization, permitting the company to repurchase both Class A and Jobs Act ("Tax Act") Class C shares in a manner deemed in the best interest of the company and its stockholders, taking into account the economic cost and prevailing market conditions, including the relative trading

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prices and volumes of the Class A and Class C shares. In accordance with the authorizations of the Board of Directors of Alphabet, during 2021 we repurchased and subsequently retired 20.3 million aggregate shares for \$50.3 billion. Of the aggregate amount repurchased and subsequently retired, 1.2 million shares were Class A stock repurchased for \$3.4 billion. As permitted by of December 31, 2021, \$17.4 billion remains available for Class A and Class C share repurchases under the Tax Act, we will pay amended authorization. The repurchases are being executed from time to time, subject to general business and market conditions and other investment opportunities, through open market purchases or privately negotiated transactions, including through Rule 10b5-1 plans. The repurchase program does not have an expiration date. See Note 11 of the transition tax Notes to Consolidated Financial Statements included in annual interest-free installments through 2025. Item 8 of this Annual Report on Form 10-K.

European Commission Fines

In 2017, 2018 and 2019, the EC announced decisions that certain actions taken by Google infringed European competition law and imposed fines of €2.4 billion (\$2.7 billion as of June 27, 2017), €4.3 billion (\$5.1 billion as of June 30, 2018), and €1.5 billion (\$1.7 billion as of March 20, 2019), respectively. While each EC decision is under appeal, we included the fines in accrued expenses and other current liabilities on our Consolidated Balance Sheets as we provided bank guarantees (in lieu of a cash payment) for the fines. In January 2021, we closed the acquisition of Fitbit, a leading wearables brand, for \$2.1 billion.

We have a short-term debt financing program of up to \$5.0 billion through the issuance of commercial paper. Net proceeds from this program are used for general corporate purposes. Taxes

As of December 31, 2020 December 31, 2021, we had no commercial paper outstanding. As short-term and long-term income taxes payable of December 31, 2020, we have \$4.0 billion of revolving credit facilities expiring

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in July 2023 with no amounts outstanding. The interest rate for the credit facilities is determined based on \$784 million and \$5.7 billion related to a formula using certain market rates.

In August 2020, we issued \$10.0 billion of fixed-rate senior unsecured notes in six tranches: \$1.0 billion due in 2025, \$1.0 billion due in 2027, \$2.25 billion due in 2030, \$1.25 billion due in 2040, \$2.5 billion due in 2050 and \$2.0 billion due in 2060. The 2020 Notes had one-time transition tax payable incurred as a weighted average duration of 21.5 years and weighted average coupon rate of 1.57%. Of the total issuance, \$5.75 billion was designated as Sustainability Bonds, the net proceeds of which are used to fund environmentally and socially responsible projects in the following eight areas: energy efficiency, clean energy, green buildings, clean transportation, circular economy and design, affordable housing, commitment to racial equity, and support for small businesses and COVID-19 crisis response. The remaining net proceeds are used for general corporate purposes. As of December 31, 2020, we have senior unsecured notes outstanding with a total carrying value of \$13.8 billion. Refer to Note 6 result of the Notes U.S. Tax Cuts and Jobs Act ("Tax Act"). As permitted by the Tax Act, we will pay the transition tax in annual interest-free installments through 2025. We also have taxes payable of \$3.5 billion primarily related to Consolidated Financial Statements included in Part II, Item 8 uncertain tax positions as of this Annual Report on Form 10-K for further information on the debts. December 31, 2021.

In accordance with the authorizations of the Board of Directors of Alphabet, in 2020 we repurchased and subsequently retired 21.5 million shares of Alphabet Class C capital stock for an aggregate amount of \$31.1 billion. As of December 31, 2020, \$17.6 billion remains authorized and available for repurchase. The repurchases are being executed from time to time, subject to general business and market conditions and other investment opportunities, through open market purchases or privately negotiated transactions, including through Rule 10b5-1 plans. The repurchase program does not have an expiration date. Refer to Note 11 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K.

Capital Expenditures and Leases Purchase Commitments

We make investments in land and buildings for data centers and offices and information technology assets through purchases of property and equipment and lease arrangements to provide capacity for the growth of our services and products.

Our capital investments in property and equipment consist primarily of the following major categories:

- Technical infrastructure, which consists of our investments in servers and network equipment for compute, storage and networking requirements for ongoing business activities, including machine learning, (collectively referred to as our information technology assets) and data center land and building construction; and
- Office facilities, ground up development projects and related building improvements.

Due to the integrated nature of Alphabet, our technical infrastructure and office facilities are managed centrally at a consolidated level. The associated costs, including depreciation and impairment, are allocated to operating segments as a service cost generally based on usage or headcount. Our technical infrastructure investments are designed to support all of Alphabet, including primarily ads, Google Cloud, Search, and YouTube.

Construction in progress consists primarily of technical infrastructure and office facilities which have not yet been placed in service for our intended use. The time frame from date of purchase to placement in service of these assets may extend to multiple periods. For example, our data center construction projects are generally multi-year projects with multiple phases, where we acquire qualified land and buildings, construct buildings, and secure and install information technology assets.

During the years ended December 31, 2019 and 2020, we spent \$23.5 billion and \$22.3 billion on capital expenditures and recognized total operating lease assets of \$4.4 billion and \$2.8 billion, respectively. As of December 31, 2020, the amount of total future lease payments under operating leases, which had a weighted average remaining lease term of 9 years, was \$15.1 billion. As of December 31, 2020, we have entered regularly enter into leases that have not yet commenced with future lease payments of \$8.0 billion, excluding purchase options, that are not yet recorded on our Consolidated Balance Sheets. These leases will commence between 2021 and 2026 with non-cancelable lease terms of 1 to 25 years.

Depreciation of our property and equipment commences when the deployment of such assets are completed and are ready for our intended use. Land is not depreciated. For the years ended December 31, 2019 and 2020, our depreciation and impairment expenses on property and equipment were \$10.9 billion and \$12.9 billion, respectively.

For the years ended December 31, 2019 and 2020, our operating lease expenses (including variable lease costs), were \$2.4 billion and \$2.9 billion, respectively. Finance leases were not material for the years ended December 31, 2019 and 2020. Please refer to Note 4 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K for further information on the leases.

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Contractual Obligations as of December 31, 2020

The following summarizes our contractual obligations as of December 31, 2020 (in millions):

	Payments Due By Period				
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Operating lease obligations ⁽¹⁾	\$ 15,091	\$ 2,198	\$ 4,165	\$ 3,127	\$ 5,601
Obligations for leases that have not yet commenced ⁽¹⁾	8,049	370	1,198	1,469	5,012
Purchase obligations ⁽²⁾	10,656	7,368	1,968	354	966
Long-term debt obligations ⁽³⁾	19,840	1,357	634	2,587	15,262
Tax payable ⁽⁴⁾	7,359	834	1,916	4,609	0
Other long-term liabilities reflected on our balance sheet ⁽⁵⁾	1,421	532	616	185	88
Total contractual obligations	\$ 62,416	\$ 12,659	\$ 10,497	\$ 12,331	\$ 26,929

⁽¹⁾ For further information, refer to Note 4 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K.

⁽²⁾ Represents significant non-cancelable contractual obligations primarily related to data center operations and build-outs; build-outs, information technology assets; assets, office buildings, purchases of inventory; inventory, and digital media content licensing network capacity arrangements. The As of December 31, 2021, such purchase commitments, which do not qualify for recognition on our Consolidated Balance Sheets, amount to \$13.7 billion, of which \$11.9 billion is short-term. These amounts included above represent the non-cancelable portion of agreements or the minimum cancellation fee. For those agreements with variable terms, we do not estimate the non-cancelable obligation beyond any minimum quantities and/or pricing as of December 31, 2020 December 31, 2021. Excluded from the table above are open orders for purchases that support normal operations, which are generally cancelable.

⁽³⁾ Represents our principal and interest payments. For further information on long-term debt, refer to Note 6 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K.

⁽⁴⁾ Represents one-time transition tax payable incurred as a result of the Tax Act. For further information, refer to Note 14 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K. Excluded from the table above are long-term taxes payable of \$2.3 billion as of December 31, 2020 primarily related to uncertain tax positions,

for which we are unable to make a reasonably reliable estimate of the timing of payments in individual years beyond 12 months due to uncertainties in the timing and outcomes of tax audits.

- (5) Represents cash obligations recorded on our Consolidated Balance Sheets, including the short-term portion of these long-term liabilities, primarily for certain commercial agreements. These amounts do not include the EC fines which are classified as current liabilities on our Consolidated Balance Sheets. For further information regarding the EC fines, refer to Note 10 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K.

Off-Balance Sheet Arrangements

As of December 31, 2020, we did not have any off-balance sheet arrangements, as defined in Item 303(a)(4)(ii) of Regulation S-K, that have or are reasonably likely to have a current or future effect on our financial condition, changes in our financial condition, revenues, or expenses, results of operations, liquidity, capital expenditures, or capital resources that is material to investors. See Note 10 included in Part II, Item 8 of this annual report on Form 10-K for more information on our commitments and contingencies.

Critical Accounting Policies and Estimates

We prepare our consolidated financial statements in accordance with GAAP. In doing so, we have to make estimates and assumptions. Our critical accounting estimates are those estimates that affect our reported amounts involve a significant level of assets, liabilities, revenues, expenses, gains uncertainty at the time the estimate was made, and losses, as well as related disclosure of contingent assets and liabilities. In some cases, we could reasonably have used different accounting policies and estimates. In some cases, changes in the accounting estimates them have had or are reasonably likely to occur from period to period, have a material effect on our financial condition or results of operations. Accordingly, actual results could differ materially from our estimates. To the extent that there are material differences between these estimates and actual results, our financial condition or results of operations will be affected. We base our estimates on past experience and other assumptions that we believe are reasonable under the circumstances, and we evaluate these estimates on an ongoing basis. We refer to accounting estimates of this type as critical accounting policies and estimates, which we discuss further below. We have reviewed our critical accounting policies and estimates with the audit and compliance committee of our Board of Directors.

Please see See Note 1 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K for a summary of significant accounting policies and the effect on our financial statements.

Fair Value Measurements of Non-Marketable Equity Securities

We measure certain financial instruments at fair value on a nonrecurring basis, consisting primarily of our non-marketable equity securities. These investments are accounted for under the measurement alternative and are measured at cost, less impairment, subject to upward and downward adjustments resulting from observable price changes for identical or similar investments of the same issuer. These adjustments require quantitative assessments of the fair value of our securities, which may require the use of unobservable inputs. Pricing adjustments are determined by using various valuation methodologies and involve the use of estimates using the best information available, which may include cash flow projections or other available market data.

Non-marketable equity securities are also evaluated for impairment, based on qualitative factors including the companies' financial and liquidity position and access to capital resources, among others. When indicators of impairment exist, we prepare quantitative measurements of the fair value of our equity investments using a market approach or an income approach, which requires judgment and the use of unobservable inputs, including discount rates, investee revenues and costs, and comparable market data of private and public companies, among others. When our assessment indicates that an impairment exists, we write down the investment to its fair value.

Alphabet Inc.

Revenues We also have compensation arrangements with payouts based on realized returns from certain investments, i.e. performance fees. We recognize compensation expense based on the estimated payouts, which may result in expense recognized before investment returns are realized, and may require the use of unobservable inputs.

For Property and Equipment

We assess the sale of third-party goods and services, we evaluate whether we are the principal, and report revenues on a gross basis, or an agent, and report revenues on a net basis. In this assessment, we consider if we obtain control reasonableness of the specified goods or services before they are transferred to the customer, useful lives of our property and equipment periodically as well as when other indicators changes occur, such as when there are changes to ongoing business operations, changes in the party primarily responsible for fulfillment, inventory risk, planned use and discretion utilization of assets, or technological advancements, that could indicate a change in establishing price, the period over which we expect to benefit from the assets.

Income Taxes

We are subject to income taxes in the U.S. and foreign jurisdictions. Significant judgment is required in evaluating our uncertain tax positions and determining our provision for income taxes.

Recording an uncertain tax position involves various qualitative considerations, including evaluation of comparable and resolved tax exposures, applicability of tax laws, and likelihood of settlement. We evaluate uncertain tax positions periodically, considering changes in facts and circumstances, such as new regulations or recent judicial opinions, as well as the status of audit activities by taxing authorities. Although we believe we have adequately reserved for our uncertain tax positions, no assurance can be given that the final tax outcome of these matters will not be different. We adjust these reserves in light of changing facts and circumstances, such as the closing of a tax audit or the refinement of an estimate. To the extent that the final tax outcome of these matters is different than the amounts recorded, such differences will affect the provision for income taxes and the effective tax rate in the period in which such determination is made.

The provision for income taxes includes the effect of reserve provisions and changes to reserves that are considered appropriate as well as the related net interest and penalties. In addition, we are subject to the continuous examination of our income tax returns by the Internal Revenue Services ("IRS") (IRS) and other tax authorities which may assert assessments against us. We regularly assess the likelihood of adverse outcomes resulting from these examinations and assessments to determine the adequacy of our provision for income taxes.

Loss Contingencies

We are regularly subject to claims, suits, regulatory and government investigations, and other proceedings involving competition, intellectual property, privacy, tax and related compliance, labor and employment, commercial disputes, content generated by our users, goods and services offered by advertisers or publishers using our platforms,

personal injury consumer protection, and other matters. Certain of these matters include speculative claims for substantial or indeterminate amounts of damages. We record a liability when we believe that it is probable that a loss has been incurred and the amount can be reasonably estimated. If we determine that a loss is reasonably possible and the loss or range of loss can be estimated, we disclose the possible loss in **Note 10** of the Notes to **the Consolidated Financial Statements**, **Statements included in Item 8 of this Annual Report on Form 10-K**.

We evaluate, on a regular basis, developments in our legal matters that could affect the amount of liability that has been previously accrued, and the matters and related reasonably possible losses disclosed, and make adjustments and changes to our disclosures as appropriate. Significant judgment is required to determine both the likelihood of **there being**, and the estimated amount of a loss related to such matters. Until the final resolution of such matters, there may be an exposure to loss in excess of the amount recorded, and such amounts could be material. **Should any**

Change in Accounting Estimate

In January 2021, we completed an assessment of the useful lives of our **estimates** servers and **assumptions** certain network equipment. In doing so, we determined we should adjust the estimated useful life. This change in accounting estimate was effective beginning fiscal year 2021 and is detailed further in Note 1 of the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to financial market risks, including changes in foreign currency exchange rates, interest rates, and equity investment risks.

Foreign Currency Exchange Risk

We transact business globally in multiple currencies. International revenues, as well as costs and expenses denominated in foreign currencies, expose us to the risk of fluctuations in foreign currency exchange rates against the U.S. dollar. Principal currencies hedged included the Australian dollar, British pound, Canadian dollar, Euro, and Japanese yen. For the purpose of analyzing foreign currency exchange risk, we considered the historical trends in

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foreign currency exchange rates and determined that it was reasonably possible that adverse changes in exchange rates of 10% could be experienced in the near term.

We use foreign exchange forward contracts to offset the foreign exchange risk on assets and liabilities denominated in currencies other than the functional currency of the subsidiary. These forward contracts reduce, but do not entirely eliminate, the effect of foreign currency exchange rate movements on our assets and liabilities. The foreign currency gains and losses on these assets and liabilities are recorded in other income (expense), net, which are offset by the gains and losses on the forward contracts.

If an adverse 10% foreign currency exchange rate change was applied to total monetary assets, liabilities, and commitments denominated in currencies other than the functional currencies at the balance sheet date, it would have resulted in an adverse effect on income before income taxes of approximately \$497 million and \$285 million as of December 31, 2020 and 2021, respectively, after consideration of the effect of foreign exchange contracts in place for the years ended December 31, 2020 and 2021.

We use foreign currency forwards and option contracts, including collars (an option strategy comprised of a combination of purchased and written options) to protect forecasted U.S. dollar-equivalent earnings from changes in foreign currency exchange rates. When the U.S. dollar strengthens, gains from foreign currency options and forwards reduce the foreign currency losses related to our earnings. When the U.S. dollar weakens, losses from foreign currency collars and forwards offset the foreign currency gains related to our earnings. These hedging contracts reduce, but do not entirely eliminate, the effect of foreign currency exchange rate movements. We designate these contracts as cash flow hedges for accounting purposes. We reflect the gains or **prove** losses of foreign currency spot rate changes as a component of AOCI and subsequently reclassify them into revenues to offset the hedged exposures as they occur.

If the U.S. dollar weakened by 10% as of December 31, 2020 and 2021, the amount recorded in AOCI related to our foreign exchange contracts before tax effect would have been **incorrect**, approximately \$912 million and \$1.3 billion lower as of December 31, 2020 and 2021, respectively. The change in the value recorded in AOCI would be expected to offset a corresponding foreign currency change in forecasted hedged revenues when recognized.

We use foreign exchange forward contracts designated as net investment hedges to hedge the foreign currency risks related to investment in foreign subsidiaries. These forward contracts serve to offset the foreign currency translation risk from our foreign operations.

If the U.S. dollar weakened by 10%, the amount recorded in cumulative translation adjustment (CTA) within AOCI related to our net investment hedge would have been approximately \$1.0 billion lower as of both December 31, 2020 and 2021. The change in value recorded in CTA would be expected to offset a corresponding foreign currency translation gain or loss from our investment in foreign subsidiaries.

Interest Rate Risk

Our Corporate Treasury investment strategy is to achieve a return that will allow us to preserve capital and maintain liquidity. We invest primarily in debt securities, including those of the U.S. government and its agencies, corporate debt securities, mortgage-backed securities, money market and other funds, municipal securities, time deposits, asset backed securities, and debt instruments issued by foreign governments. By policy, we limit the amount of credit exposure to any one issuer. Our investments in both fixed rate and floating rate interest earning securities carry a degree of interest rate risk. Fixed rate securities may have their fair market value adversely affected due to a rise in interest rates, while floating rate securities may produce less income than predicted if interest rates fall. Unrealized gains or losses on our marketable debt securities are primarily due to interest rate fluctuations as compared to interest rates at the time of purchase. For certain fixed and variable rate debt securities, we have elected the fair value option for which changes in fair value are recorded in other income (expense), net. We measure securities for which we have not elected the fair value option at fair value with gains and losses recorded in AOCI until the securities are sold, less any expected credit losses.

We use value-at-risk (VaR) analysis to determine the potential effect of fluctuations in interest rates on the value of our marketable debt security portfolio. The VaR is the expected loss in fair value, for a given confidence interval, for our investment portfolio due to adverse movements in interest rates. We use a variance/covariance VaR model with 95% confidence interval. The estimated one-day loss in fair value of marketable debt securities as of December 31, 2020 and 2021 are shown below (in millions):

Risk Category - Interest Rate	As of December 31,		12-Month Average As of December 31,	
	2020	2021	2020	2021
	\$	\$	\$	\$
	144	139	145	148

Alphabet Inc.

Actual future gains and losses associated with our marketable debt security portfolio may differ materially from the sensitivity analyses performed as of December 31, 2020 and 2021 due to the inherent limitations associated with predicting the timing and amount of changes in interest rates and our actual exposures and positions. VaR analysis is not intended to represent actual losses but is used as a risk estimation.

Equity Investment Risk

Our marketable and non-marketable equity securities are subject to a wide variety of market-related risks that could substantially reduce or increase the fair value of our holdings.

Our marketable equity securities are publicly traded stocks or funds and our non-marketable equity securities are investments in privately held companies, some of which are in the startup or development stages.

We record marketable equity securities not accounted for under the equity method at fair value based on readily determinable market values, of which publicly traded stocks and mutual funds are subject to market price volatility, and represent \$5.9 billion and \$7.8 billion of our investments as of December 31, 2020 and 2021, respectively. A hypothetical adverse price change of 10% on our December 31, 2021 balance, which could be experienced in the near term, would decrease the fair value of marketable equity securities by \$780 million. From time to time, we may enter into derivatives to hedge the market price risk on certain of our marketable equity securities.

Our non-marketable equity securities not accounted for under the equity method are adjusted to fair value for observable transactions for identical or similar investments of the same issuer or impairment (referred to as the measurement alternative). The fair value measured at the time of the observable transaction is not necessarily an indication of the current fair value as of the balance sheet date. These investments, especially those that are in the early stages, are inherently risky because the technologies or products these companies have under development are typically in the early phases and may never materialize, and they may experience a decline in financial condition, which could result in a loss of a substantial part of our investment in these companies. The success of our investment in any private company is also typically dependent on the likelihood of our ability to realize appreciation in the value of investments through liquidity events such as public offerings, acquisitions, private sales or other market events. As of December 31, 2020 and 2021, the carrying value of our non-marketable equity securities, which were accounted for under the measurement alternative, was \$18.9 billion and \$27.6 billion, respectively. Valuations of our equity investments in private companies are inherently more complex due to the lack of readily available market data. Volatility in the global economic climate and financial markets could result in a significant impairment charge relating to our non-marketable equity securities. Changes in valuation of non-marketable equity securities may not directly correlate with changes in valuation of marketable equity securities. Additionally, observable transactions at lower valuations could result in significant losses on our non-marketable equity securities. The effect of COVID-19 on our impairment assessment requires significant judgment due to the uncertainty around the duration and severity of the effect.

The carrying values of our equity method investments, which totaled approximately \$1.4 billion and \$1.5 billion as of December 31, 2020 and 2021, respectively, generally do not fluctuate based on market price changes. However, these investments could be impaired if the carrying value exceeds the fair value and is not expected to recover.

For further information about our equity investments, see Note 1 and Note 3 of the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K.

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ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Alphabet Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Alphabet Inc. (the Company) as of December 31, 2020 and 2021, the related consolidated statements of income, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2021, and the related notes and financial statement schedule listed in the Index at Item 15 (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, 2020 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2021, in conformity with 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, 2021, 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 1, 2022 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 U.S. 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.

Loss Contingencies*Description of the Matter*

The Company is regularly subject to claims, suits, regulatory and government investigations, and other proceedings involving competition, intellectual property, privacy, tax and related compliance, labor and employment, commercial disputes, content generated by its users, goods and services offered by advertisers or publishers using their platforms, personal injury, consumer protection, and other matters. As described in Note 10 to the consolidated financial statements "Contingencies" such claims, suits, regulatory and government investigations, and other proceedings could result in adverse consequences.

Significant judgment is required to determine both the likelihood, and the estimated amount, of a loss related to such matters. Auditing management's accounting for and disclosure of loss contingencies from these matters involved challenging and subjective auditor judgment in assessing the Company's evaluation of the probability of a loss, and the estimated amount or range of loss.

How We Addressed the Matter in Our Audit

We tested relevant controls over the identified risks associated with management's accounting for and disclosure of these matters. This included controls over management's assessment of the probability of incurrence of a loss and whether the loss or range of loss was reasonably estimable and the development of related disclosures.

Our audit procedures included gaining an understanding of previous rulings issued by regulators and the status of ongoing lawsuits, reviewing letters addressing the matters from internal and external legal counsel, meeting with internal legal counsel to discuss the allegations, and obtaining a representation letter from management on these matters. We also evaluated the Company's disclosures in relation to these matters.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1999.

San Jose, California

February 1, 2022

Alphabet Inc.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Alphabet Inc.

Opinion on Internal Control over Financial Reporting

We have audited Alphabet Inc.'s internal control over financial reporting as of December 31, 2021, 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, Alphabet Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2021, 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 2021 consolidated financial statements of the Company and our report dated February 1, 2022 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 U.S. 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 our business, 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

San Jose, California

February 1, 2022

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CONSOLIDATED BALANCE SHEETS

(In millions, except share amounts which are reflected in thousands, and par value per share amounts)

	As of December 31,	
	2020	2021
Assets		

Current assets:			
Cash and cash equivalents	\$	26,465	\$ 20,945
Marketable securities		110,229	118,704
Total cash, cash equivalents, and marketable securities		136,694	139,649
Accounts receivable, net		30,930	39,304
Income taxes receivable, net		454	966
Inventory		728	1,170
Other current assets		5,490	7,054
Total current assets		174,296	188,143
Non-marketable securities		20,703	29,549
Deferred income taxes		1,084	1,284
Property and equipment, net		84,749	97,599
Operating lease assets		12,211	12,959
Intangible assets, net		1,445	1,417
Goodwill		21,175	22,956
Other non-current assets		3,953	5,361
Total assets	\$	319,616	\$ 359,268
Liabilities and Stockholders' Equity			
Current liabilities:			
Accounts payable	\$	5,589	\$ 6,037
Accrued compensation and benefits		11,086	13,889
Accrued expenses and other current liabilities		28,631	31,236
Accrued revenue share		7,500	8,996
Deferred revenue		2,543	3,288
Income taxes payable, net		1,485	808
Total current liabilities		56,834	64,254
Long-term debt		13,932	14,817
Deferred revenue, non-current		481	535
Income taxes payable, non-current		8,849	9,176
Deferred income taxes		3,561	5,257
Operating lease liabilities		11,146	11,389
Other long-term liabilities		2,269	2,205
Total liabilities		97,072	107,633
Contingencies (Note 10)			
Stockholders' equity:			
Preferred stock, \$0.001 par value per share, 100,000 shares authorized; no shares issued and outstanding		0	0
Class A and Class B common stock, and Class C capital stock and additional paid-in capital, \$0.001 par value per share: 15,000,000 shares authorized (Class A 9,000,000, Class B 3,000,000, Class C 3,000,000); 675,222 (Class A 300,730, Class B 45,843, Class C 328,649) and 662,121 (Class A 300,737, Class B 44,665, Class C 316,719) shares issued and outstanding		58,510	61,774
Accumulated other comprehensive income (loss)		633	(1,623)
Retained earnings		163,401	191,484
Total stockholders' equity		222,544	251,635
Total liabilities and stockholders' equity	\$	319,616	\$ 359,268

See accompanying notes.

Alphabet Inc.

Alphabet Inc.

CONSOLIDATED STATEMENTS OF INCOME
(In millions, except per share amounts)

	Year Ended December 31,		
	2019	2020	2021
Revenues	\$ 161,857	\$ 182,527	\$ 257,637
Costs and expenses:			
Cost of revenues	71,896	84,732	110,939
Research and development	26,018	27,573	31,562
Sales and marketing	18,464	17,946	22,912
General and administrative	9,551	11,052	13,510
European Commission fines	1,697	0	0
Total costs and expenses	127,626	141,303	178,923
Income from operations	34,231	41,224	78,714
Other income (expense), net	5,394	6,858	12,020
Income before income taxes	39,625	48,082	90,734
Provision for income taxes	5,282	7,813	14,701
Net income	\$ 34,343	\$ 40,269	\$ 76,033
Basic net income per share of Class A and B common stock and Class C capital stock	\$ 49.59	\$ 59.15	\$ 113.88
Diluted net income per share of Class A and B common stock and Class C capital stock	\$ 49.16	\$ 58.61	\$ 112.20

See accompanying notes.

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Alphabet Inc.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In millions)

	Year Ended December 31,		
	2019	2020	2021
Net income	\$ 34,343	\$ 40,269	\$ 76,033
Other comprehensive income (loss):			
Change in foreign currency translation adjustment	(119)	1,139	(1,442)
Available-for-sale investments:			
Change in net unrealized gains (losses)	1,611	1,313	(1,312)
Less: reclassification adjustment for net (gains) losses included in net income	(111)	(513)	(64)
Net change, net of income tax benefit (expense) of \$(221), \$(230), and \$394	1,500	800	(1,376)
Cash flow hedges:			
Change in net unrealized gains (losses)	22	42	716
Less: reclassification adjustment for net (gains) losses included in net income	(299)	(116)	(154)
Net change, net of income tax benefit (expense) of \$42, \$11, and \$(122)	(277)	(74)	562
Other comprehensive income (loss)	1,104	1,865	(2,256)
Comprehensive income	\$ 35,447	\$ 42,134	\$ 73,777

See accompanying notes.

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Alphabet Inc.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(In millions, except share amounts which are reflected in thousands)

	Class A and Class B Common Stock, Class C Capital Stock and Additional Paid-In Capital		Accumulated Other Comprehensive Income (Loss)		Total Stockholders' Equity
	Shares	Amount		Retained Earnings	
Balance as of December 31, 2018	695,556	\$ 45,049	\$ (2,306)	\$ 134,885	\$ 177,628
Cumulative effect of accounting change	0	0	(30)	(4)	(34)
Common and capital stock issued	8,120	202	0	0	202
Stock-based compensation expense	0	10,890	0	0	10,890
Income tax withholding related to vesting of restricted stock units and other	0	(4,455)	0	0	(4,455)
Repurchases of capital stock	(15,341)	(1,294)	0	(17,102)	(18,396)
Sale of interest in consolidated entities	0	160	0	0	160
Net income	0	0	0	34,343	34,343
Other comprehensive income (loss)	0	0	1,104	0	1,104
Balance as of December 31, 2019	688,335	50,552	(1,232)	152,122	201,442
Common and capital stock issued	8,398	168	0	0	168
Stock-based compensation expense	0	13,123	0	0	13,123
Income tax withholding related to vesting of restricted stock units and other	0	(5,969)	0	0	(5,969)
Repurchases of capital stock	(21,511)	(2,159)	0	(28,990)	(31,149)
Sale of interest in consolidated entities	0	2,795	0	0	2,795
Net income	0	0	0	40,269	40,269
Other comprehensive income (loss)	0	0	1,865	0	1,865
Balance as of December 31, 2020	675,222	58,510	633	163,401	222,544
Common and capital stock issued	7,225	12	0	0	12
Stock-based compensation expense	0	15,539	0	0	15,539
Income tax withholding related to vesting of restricted stock units and other	0	(10,273)	0	0	(10,273)
Repurchases of common and capital stock	(20,326)	(2,324)	0	(47,950)	(50,274)
Sale of interest in consolidated entities	0	310	0	0	310
Net income	0	0	0	76,033	76,033
Other comprehensive income (loss)	0	0	(2,256)	0	(2,256)
Balance as of December 31, 2021	662,121	\$ 61,774	\$ (1,623)	\$ 191,484	\$ 251,635

See accompanying notes.

Alphabet Inc.

Alphabet Inc.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In millions)

	Year Ended December 31,		
	2019	2020	2021
Operating activities			
Net income	\$ 34,343	\$ 40,269	\$ 76,033
Adjustments:			
Depreciation and impairment of property and equipment	10,856	12,905	11,555
Amortization and impairment of intangible assets	925	792	886
Stock-based compensation expense	10,794	12,991	15,376
Deferred income taxes	173	1,390	1,808
Gain on debt and equity securities, net	(2,798)	(6,317)	(12,270)

Other	(592)	1,267	(213)
Changes in assets and liabilities, net of effects of acquisitions:			
Accounts receivable	(4,340)	(6,524)	(9,095)
Income taxes, net	(3,128)	1,209	(625)
Other assets	(621)	(1,330)	(1,846)
Accounts payable	428	694	283
Accrued expenses and other liabilities	7,170	5,504	7,304
Accrued revenue share	1,273	1,639	1,682
Deferred revenue	37	635	774
Net cash provided by operating activities	54,520	65,124	91,652
Investing activities			
Purchases of property and equipment	(23,548)	(22,281)	(24,640)
Purchases of marketable securities	(100,315)	(136,576)	(135,196)
Maturities and sales of marketable securities	97,825	132,906	128,294
Purchases of non-marketable securities	(1,932)	(7,175)	(2,838)
Maturities and sales of non-marketable securities	405	1,023	934
Acquisitions, net of cash acquired, and purchases of intangible assets	(2,515)	(738)	(2,618)
Other investing activities	589	68	541
Net cash used in investing activities	(29,491)	(32,773)	(35,523)
Financing activities			
Net payments related to stock-based award activities	(4,765)	(5,720)	(10,162)
Repurchases of common and capital stock	(18,396)	(31,149)	(50,274)
Proceeds from issuance of debt, net of costs	317	11,761	20,199
Repayments of debt	(585)	(2,100)	(21,435)
Proceeds from sale of interest in consolidated entities, net	220	2,800	310
Net cash used in financing activities	(23,209)	(24,408)	(61,362)
Effect of exchange rate changes on cash and cash equivalents	(23)	24	(287)
Net increase (decrease) in cash and cash equivalents	1,797	7,967	(5,520)
Cash and cash equivalents at beginning of period	16,701	18,498	26,465
Cash and cash equivalents at end of period	<u>\$ 18,498</u>	<u>\$ 26,465</u>	<u>\$ 20,945</u>
Supplemental disclosures of cash flow information			
Cash paid for income taxes, net of refunds	\$ 8,203	\$ 4,990	\$ 13,412

See accompanying notes.

Alphabet Inc.

Alphabet Inc.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1. Summary of Significant Accounting Policies

Google was incorporated in California in September 1998 and re-incorporated in the State of Delaware in August 2003. In 2015, we implemented a holding company reorganization, and as a result, Alphabet Inc. ("Alphabet") became the successor issuer to Google.

Basis of Consolidation

The consolidated financial position, statements of Alphabet include the accounts of Alphabet and entities consolidated under the variable interest and voting models. All intercompany balances and transactions have been eliminated.

Use of Estimates

Preparation of consolidated financial statements in conformity with GAAP requires us to make estimates and assumptions that affect the amounts reported and disclosed in the financial statements and the accompanying notes. Actual results could differ materially from these estimates due to uncertainties, including the effects of COVID-19. On an ongoing basis, we evaluate our estimates, including those related to the allowance for credit losses; fair values of financial instruments, intangible assets, and goodwill; useful lives

of intangible assets and property and equipment; income taxes; and contingent liabilities, among others. We base our estimates on assumptions, both historical and forward looking, that are believed to be reasonable, and the results of operations, or cash flows.

Long-lived Assets

Long-lived assets, including property and equipment, long-term prepayments, and intangible assets, excluding goodwill, are reviewed which form the basis for impairment whenever events or changes in circumstances indicate that making judgments about the carrying amount values of assets and liabilities.

In January 2021, we completed an assessment of the useful lives of our servers and network equipment and adjusted the estimated useful life of our servers from three years to four years and the estimated useful life of certain network equipment from three years to five years. This change in accounting estimate was effective beginning in fiscal year 2021. Based on the carrying value of servers and certain network equipment as of December 31, 2020 and those acquired during the year ended December 31, 2021, the effect of this change in estimate was a reduction in depreciation expense of \$2.6 billion and an increase in net income of \$2.0 billion, or \$3.02 per basic share and \$2.98 per diluted share, for the year ended December 31, 2021.

Revenue Recognition

Revenues are recognized when control of the promised goods or services is transferred to our customers, and the collectibility of an asset may not be recoverable. The evaluation amount that we expect in exchange for those goods or services is performed at probable. Sales and other similar taxes are excluded from revenues.

Advertising Revenues

We generate advertising revenues primarily by delivering advertising on:

- Google Search and other properties, including revenues from traffic generated by search distribution partners who use Google.com as their default search in browsers, toolbars, etc. and other Google owned and operated properties like Gmail, Google Maps, and Google Play;
- YouTube properties; and
- Google Network properties, including revenues from Google Network properties participating in AdMob, AdSense, and Google Ad Manager.

Our customers generally purchase advertising inventory through Google Ads, Google Ad Manager, and Google Marketing Platform, among others.

We offer advertising by delivering both performance and brand advertising. We recognize revenues for performance advertising when a user engages with the lowest advertisement, such as a click, a view, or a purchase. For brand advertising, we recognize revenues when the ad is displayed, or a user views the ad.

For ads placed on Google Network properties, we evaluate whether we are the principal (i.e., report revenues on a gross basis) or agent (i.e., report revenues on a net basis). Generally, we report advertising revenues for ads placed on Google Network properties on a gross basis, that is, the amounts billed to our customers are recorded as revenues, and amounts paid to Google Network partners are recorded as cost of revenues. Where we are the principal, we control the advertising inventory before it is transferred to our customers. Our control is evidenced by our sole ability to monetize the advertising inventory before it is transferred to our customers and is further supported by us being primarily responsible to our customers and having a level of identifiable cash flows independent discretion in establishing pricing.

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Google Cloud Revenues

Google Cloud revenues consist of revenues from:

- Google Cloud Platform, which includes fees for infrastructure, platform, and other assets. An impairment loss would be services;
- Google Workspace, which includes fees for cloud-based collaboration tools for enterprises, such as Gmail, Docs, Drive, Calendar, and Meet; and
- other enterprise services.

Our cloud services are generally provided on either a consumption or subscription basis and may have contract terms longer than a year. Revenues related to cloud services provided on a consumption basis are recognized when estimated undiscounted future cash flows generated from the assets are less than their carrying amount. Measurement of an impairment loss would be customer utilizes the services, based on the excess quantity of services consumed. Revenues related to cloud services provided on a subscription basis are recognized ratably over the contract term as the customer receives and consumes the benefits of the carrying cloud services.

Google Other Revenues

Google other revenues consist of revenues from:

- Google Play, which includes sales of apps and in-app purchases and digital content sold in the Google Play store;
- hardware, which includes sales of Fitbit wearable devices, Google Nest home products, and Pixel phones;
- YouTube non-advertising, which includes YouTube Premium and YouTube TV subscriptions; and
- other products and services.

As it relates to Google other revenues, the most significant judgment is determining whether we are the principal or agent for app sales and in-app purchases through the Google Play store. We report revenues from these transactions on a net basis because our performance obligation is to facilitate a transaction between app developers and end users, for which we earn a service fee.

Arrangements with Multiple Performance Obligations

Our contracts with customers may include multiple performance obligations. For such arrangements, we allocate revenues to each performance obligation based on its relative standalone selling price. We generally determine standalone selling prices based on the prices charged to customers or using expected cost plus margin.

Customer Incentives and Credits

Certain customers receive cash-based incentives or credits, which are accounted for as variable consideration. We estimate these amounts based on the expected amount to be provided to customers and reduce revenues. We believe that there will not be significant changes to our estimates of variable consideration.

Sales Commissions

We expense sales commissions when incurred and when the amortization period (the period of the expected benefit) is one year or less. We recognize an asset group for certain sales commissions if we expect the period of benefit of these costs to exceed one year and recognize the expense over its amortization period. These costs are recorded within sales and marketing expenses.

Cost of Revenues

Cost of revenues consists of TAC and other costs of revenues.

- TAC includes:
 - Amounts paid to our distribution partners who make available our search access points and services. Our distribution partners include browser providers, mobile carriers, original equipment manufacturers, and software developers.
 - Amounts paid to Google Network partners primarily for ads displayed on their properties.
- Other cost of revenues includes:
 - Content acquisition costs, which are payments to content providers from whom we license video and other content for distribution on YouTube and Google Play (we pay fees to these content providers based on revenues generated or a flat fee).

Alphabet Inc.

- Expenses associated with our data centers (including bandwidth, compensation expenses, depreciation, energy, and other equipment costs) as well as other operations costs (such as content review as well as customer and product support costs).
- Inventory and other costs related to the hardware we sell.

Software Development Costs

We expense software development costs, including costs to develop software products or the software component of products to be sold, leased, or marketed to external users, before technological feasibility is reached. Technological feasibility is typically reached shortly before the release of such products. As a result, development costs that meet the criteria for capitalization were not material for the periods presented.

Software development costs also include costs to develop software to be used solely to meet internal needs and cloud based applications used to deliver our services. We capitalize development costs related to these software applications once the preliminary project stage is complete and it is probable that the project will be completed and the software will be used to perform the function intended. Costs capitalized for developing such software applications were not material for the periods presented.

Stock-based Compensation

Stock-based compensation primarily consists of Alphabet restricted stock units (RSUs). RSUs are equity classified and measured at the fair value, market value of the underlying stock at the grant date. We recognize RSU expense using the straight-line attribution method over the requisite service period and account for forfeitures as they occur.

For RSUs, shares are issued on the vesting dates net of the applicable statutory income tax withholding to be paid by us on behalf of our employees. As a result, fewer shares are issued than the number of RSUs outstanding, and the income tax withholding is recorded as a reduction to additional paid-in capital.

Additionally, stock-based compensation also includes other stock-based awards, such as performance stock units (PSUs) that include market conditions and awards that may be settled in cash or the stock of certain Other Bets. PSUs and certain Other Bet awards are equity classified and expense is recognized over the requisite service period. Certain Other Bet awards are liability classified and remeasured at fair value through settlement. The fair value of Other Bet awards is based on the equity valuation of the respective Other Bet.

Advertising and Promotional Expenses

We expense advertising and promotional costs in the period in which they are incurred. For the years ended December 31, 2019, 2020 and 2021, advertising and promotional expenses totaled approximately \$6.8 billion, \$5.4 billion, and \$7.9 billion, respectively.

Performance Fees

Performance fees refer to compensation arrangements with payouts based on realized returns from certain investments. We recognize compensation expense based on the estimated payouts, which may result in expense recognized before investment returns are realized, and may require the use of unobservable inputs. Performance fees are recorded as a component of other income (expense), net.

Fair Value Measurements Interest Rate Risk

Our Corporate Treasury investment strategy is to achieve a return that will allow us to preserve capital and maintain liquidity. We invest primarily in debt securities, including those of the U.S. government and its agencies, corporate debt securities, mortgage-backed securities, money market and other funds, municipal securities, time deposits, asset backed securities, and debt instruments issued by foreign governments. By policy, we limit the amount of credit exposure to any one issuer. Our investments in both fixed rate and floating rate interest earning securities carry a degree of interest rate risk. Fixed rate securities may have their fair market value adversely affected due to a rise in interest rates, while floating rate securities may produce less income than predicted if interest rates fall. Unrealized gains or losses on our marketable debt securities are primarily due to interest rate fluctuations as compared to interest rates at the time of purchase. For certain fixed and variable rate debt securities, we have elected the fair value option for which changes in

fair value are recorded in other income (expense), net. We measure certain of our non-marketable equity and debt investments, certain other instruments including stock-based compensation awards settled in securities for which we have not elected the stock of certain Other Bets, and certain assets and liabilities acquired in a business combination, fair value option at fair value on a nonrecurring basis. The determination of fair value involves with gains and losses recorded in AOCI until the securities are sold, less any expected credit losses.

We use of appropriate valuation methods and relevant inputs into valuation models. The fair value hierarchy prioritizes the inputs used to measure fair value whereby it gives the highest priority to quoted prices (unadjusted) in active markets for identical assets or liabilities and the lowest priority to unobservable inputs. We maximize the use of relevant observable inputs and minimize the use of unobservable inputs. Our use of unobservable inputs reflects the assumptions that market participants would use and may include our own data adjusted based on reasonably available information. We apply judgment in assessing the relevance of observable market data value-at-risk (VaR) analysis to determine the priority potential effect of inputs under fluctuations in interest rates on the value of our marketable debt security portfolio. The VaR is the expected loss in fair value, hierarchy, particularly for a given confidence interval, for our investment portfolio due to adverse movements in situations where there is very little or no market activity, interest rates. We use a variance/covariance VaR model with 95% confidence interval. The estimated one-day loss in fair value of marketable debt securities as of December 31, 2020 and 2021 are shown below (in millions):

Risk Category - Interest Rate	As of December 31,		12-Month Average As of December 31,	
	2020	2021	2020	2021
	\$	\$	\$	\$
	144	139	145	148

Alphabet Inc.

In determining Actual future gains and losses associated with our marketable debt security portfolio may differ materially from the sensitivity analyses performed as of December 31, 2020 and 2021 due to the inherent limitations associated with predicting the timing and amount of changes in interest rates and our actual exposures and positions. VaR analysis is not intended to represent actual losses but is used as a risk estimation.

Equity Investment Risk

Our marketable and non-marketable equity securities are subject to a wide variety of market-related risks that could substantially reduce or increase the fair values value of our holdings.

Our marketable equity securities are publicly traded stocks or funds and our non-marketable equity and debt securities are investments as well as assets acquired (especially with respect to intangible assets) and liabilities assumed in business combinations, we make significant estimates and assumptions, privately held companies, some of which include the use of unobservable inputs.

Certain stock-based compensation awards may be settled are in the stock startup or development stages.

We record marketable equity securities not accounted for under the equity method at fair value based on readily determinable market values, of which publicly traded stocks and mutual funds are subject to market price volatility, and represent \$5.9 billion and \$7.8 billion of our investments as of December 31, 2020 and 2021, respectively. A hypothetical adverse price change of 10% on our December 31, 2021 balance, which could be experienced in the near term, would decrease the fair value of marketable equity securities by \$780 million. From time to time, we may enter into derivatives to hedge the market price risk on certain of our Other Bets or in cash. These awards are based on the marketable equity values of the respective Other Bet, which requires use of unobservable inputs.

We also have compensation arrangements with payouts based on realized investment returns, i.e. performance fees. We recognize compensation expense based on the estimated payouts, which may result in expense recognized before investment returns are realized, and may require the use of unobservable inputs.

Non-marketable Equity Securities securities.

Our non-marketable equity securities not accounted for under the equity method are carried either at adjusted to fair value or under the measurement alternative. Under the measurement alternative, the carrying value is measured at cost, less any impairment, plus or minus changes resulting from for observable price changes in orderly transactions for the identical or a similar investment investments of the same issuer. Determining whether an observed issuer or impairment (referred to as the measurement alternative). The fair value measured at the time of the observable transaction is similar to not necessarily an indication of the current fair value as of the balance sheet date. These investments, especially those that are in the early stages, are inherently risky because the technologies or products these companies have under development are typically in the early phases and may never materialize, and they may experience a security within decline in financial condition, which could result in a loss of a substantial part of our portfolio requires judgment based investment in these companies. The success of our investment in any private company is also typically dependent on the rights likelihood of our ability to realize appreciation in the value of investments through liquidity events such as public offerings, acquisitions, private sales or other market events. As of December 31, 2020 and obligations of the securities. Recording upward and downward adjustments to 2021, the carrying value of our non-marketable equity securities, as a result of observable price changes requires quantitative assessments of which were accounted for under the fair value of our securities using various valuation methodologies measurement alternative, was \$18.9 billion and involves the use of estimates.

Non-marketable equity securities are also subject to periodic impairment reviews. Our quarterly impairment analysis considers both qualitative and quantitative factors that may have a significant effect on the investment's fair value. Qualitative factors considered include the companies' financial and liquidity position, access to capital resources and the time since the last adjustment to fair value, among others. When indicators of impairment exist, we prepare quantitative assessments of the fair value \$27.6 billion, respectively. Valuations of our equity investments using both in private companies are inherently more complex due to the lack of readily available market data. Volatility in the global economic climate and income approaches financial markets could result in a significant impairment charge relating to our non-marketable equity securities. Changes in valuation of non-marketable equity securities may not directly correlate with changes in valuation of marketable equity securities. Additionally, observable transactions at lower valuations could result in significant losses on our non-marketable equity securities. The effect of COVID-19 on our impairment assessment requires significant judgment due to the uncertainty around the duration and severity of the effect.

The carrying values of our equity method investments, which require judgment totaled approximately \$1.4 billion and \$1.5 billion as of December 31, 2020 and 2021, respectively, generally do not fluctuate based on market price changes. However, these investments could be impaired if the carrying value exceeds the fair value and is not expected to recover.

For further information about our equity investments, see Note 1 and Note 3 of the Notes to Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K.

Alphabet Inc.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Alphabet Inc.

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Alphabet Inc.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Alphabet Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Alphabet Inc. (the Company) as of December 31, 2020 and 2021, the related consolidated statements of income, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2021, and the related notes and financial statement schedule listed in the Index at Item 15 (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, 2020 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2021, in conformity with 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, 2021, 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 1, 2022 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 U.S. 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.

Loss Contingencies**Description of the Matter**

The Company is regularly subject to claims, suits, regulatory and government investigations, and other proceedings involving competition, intellectual property, privacy, tax and related compliance, labor and employment, commercial disputes, content generated by its users, goods and services offered by advertisers or publishers using their platforms, personal injury, consumer protection, and other matters. As described in Note 10 to the consolidated financial statements "Contingencies" such claims, suits, regulatory and government investigations, and other proceedings could result in adverse consequences.

Significant judgment is required to determine both the likelihood, and the estimated amount, of a loss related to such matters. Auditing management's accounting for and disclosure of loss contingencies from these matters involved challenging and subjective auditor judgment in assessing the Company's evaluation of the probability of a loss, and the estimated amount or range of loss.

How We Addressed the Matter in Our Audit

We tested relevant controls over the identified risks associated with management's accounting for and disclosure of these matters. This included controls over management's assessment of the probability of incurrence of a loss and whether the loss or range of loss was reasonably estimable and the development of related disclosures.

Our audit procedures included gaining an understanding of previous rulings issued by regulators and the status of ongoing lawsuits, reviewing letters addressing the matters from internal and external legal counsel, meeting with internal legal counsel to discuss the allegations, and obtaining a representation letter from management on these matters. We also evaluated the Company's disclosures in relation to these matters.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1999.

San Jose, California

February 1, 2022

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Alphabet Inc.

Opinion on Internal Control over Financial Reporting

We have audited Alphabet Inc.'s internal control over financial reporting as of December 31, 2021, 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, Alphabet Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2021, 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 2021 consolidated financial statements of the Company and our report dated February 1, 2022 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 U.S. 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

San Jose, California

February 1, 2022

Alphabet Inc.

Alphabet Inc.
CONSOLIDATED BALANCE SHEETS

(In millions, except share amounts which are reflected in thousands, and par value per share amounts)

	As of December 31,	
	2020	2021
Assets		
Current assets:		
Cash and cash equivalents	\$ 26,465	\$ 20,945
Marketable securities	110,229	118,704
Total cash, cash equivalents, and marketable securities	136,694	139,649
Accounts receivable, net	30,930	39,304
Income taxes receivable, net	454	966
Inventory	728	1,170
Other current assets	5,490	7,054
Total current assets	174,296	188,143
Non-marketable securities	20,703	29,549
Deferred income taxes	1,084	1,284
Property and equipment, net	84,749	97,599
Operating lease assets	12,211	12,959
Intangible assets, net	1,445	1,417
Goodwill	21,175	22,956
Other non-current assets	3,953	5,361
Total assets	<u>\$ 319,616</u>	<u>\$ 359,268</u>
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	\$ 5,589	\$ 6,037
Accrued compensation and benefits	11,086	13,889
Accrued expenses and other current liabilities	28,631	31,236
Accrued revenue share	7,500	8,996
Deferred revenue	2,543	3,288
Income taxes payable, net	1,485	808
Total current liabilities	56,834	64,254
Long-term debt	13,932	14,817
Deferred revenue, non-current	481	535
Income taxes payable, non-current	8,849	9,176
Deferred income taxes	3,561	5,257
Operating lease liabilities	11,146	11,389
Other long-term liabilities	2,269	2,205
Total liabilities	<u>97,072</u>	<u>107,633</u>
Contingencies (Note 10)		

Stockholders' equity:		
Preferred stock, \$0.001 par value per share, 100,000 shares authorized; no shares issued and outstanding	0	0
Class A and Class B common stock, and Class C capital stock and additional paid-in capital, \$0.001 par value per share: 15,000,000 shares authorized (Class A 9,000,000, Class B 3,000,000, Class C 3,000,000); 675,222 (Class A 300,730, Class B 45,843, Class C 328,649) and 662,121 (Class A 300,737, Class B 44,665, Class C 316,719) shares issued and outstanding	58,510	61,774
Accumulated other comprehensive income (loss)	633	(1,623)
Retained earnings	163,401	191,484
Total stockholders' equity	222,544	251,635
Total liabilities and stockholders' equity	\$ 319,616	\$ 359,268

See accompanying notes.

Alphabet Inc.

Alphabet Inc.
CONSOLIDATED STATEMENTS OF INCOME
(In millions, except per share amounts)

	Year Ended December 31,		
	2019	2020	2021
Revenues	\$ 161,857	\$ 182,527	\$ 257,637
Costs and expenses:			
Cost of revenues	71,896	84,732	110,939
Research and development	26,018	27,573	31,562
Sales and marketing	18,464	17,946	22,912
General and administrative	9,551	11,052	13,510
European Commission fines	1,697	0	0
Total costs and expenses	127,626	141,303	178,923
Income from operations	34,231	41,224	78,714
Other income (expense), net	5,394	6,858	12,020
Income before income taxes	39,625	48,082	90,734
Provision for income taxes	5,282	7,813	14,701
Net income	\$ 34,343	\$ 40,269	\$ 76,033
Basic net income per share of Class A and B common stock and Class C capital stock	\$ 49.59	\$ 59.15	\$ 113.88
Diluted net income per share of Class A and B common stock and Class C capital stock	\$ 49.16	\$ 58.61	\$ 112.20

See accompanying notes.

Alphabet Inc.

Alphabet Inc.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In millions)

	Year Ended December 31,		
	2019	2020	2021
Net income	\$ 34,343	\$ 40,269	\$ 76,033
Other comprehensive income (loss):			
Change in foreign currency translation adjustment	(119)	1,139	(1,442)
Available-for-sale investments:			
Change in net unrealized gains (losses)	1,611	1,313	(1,312)
Less: reclassification adjustment for net (gains) losses included in net income	(111)	(513)	(64)

Net change, net of income tax benefit (expense) of \$(221), \$(230), and \$394	1,500	800	(1,376)
Cash flow hedges:			
Change in net unrealized gains (losses)	22	42	716
Less: reclassification adjustment for net (gains) losses included in net income	(299)	(116)	(154)
Net change, net of income tax benefit (expense) of \$42, \$11, and \$(122)	(277)	(74)	562
Other comprehensive income (loss)	1,104	1,865	(2,256)
Comprehensive income	\$ 35,447	\$ 42,134	\$ 73,777

See accompanying notes.

Alphabet Inc.

Alphabet Inc.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(In millions, except share amounts which are reflected in thousands)

	Class A and Class B Common Stock, Class C Capital Stock and Additional Paid-In Capital		Accumulated Other Comprehensive Income (Loss)	Retained Earnings	Total Stockholders' Equity
	Shares	Amount			
Balance as of December 31, 2018	695,556	\$ 45,049	\$ (2,306)	\$ 134,885	\$ 177,628
Cumulative effect of accounting change	0	0	(30)	(4)	(34)
Common and capital stock issued	8,120	202	0	0	202
Stock-based compensation expense	0	10,890	0	0	10,890
Income tax withholding related to vesting of restricted stock units and other	0	(4,455)	0	0	(4,455)
Repurchases of capital stock	(15,341)	(1,294)	0	(17,102)	(18,396)
Sale of interest in consolidated entities	0	160	0	0	160
Net income	0	0	0	34,343	34,343
Other comprehensive income (loss)	0	0	1,104	0	1,104
Balance as of December 31, 2019	688,335	50,552	(1,232)	152,122	201,442
Common and capital stock issued	8,398	168	0	0	168
Stock-based compensation expense	0	13,123	0	0	13,123
Income tax withholding related to vesting of restricted stock units and other	0	(5,969)	0	0	(5,969)
Repurchases of capital stock	(21,511)	(2,159)	0	(28,990)	(31,149)
Sale of interest in consolidated entities	0	2,795	0	0	2,795
Net income	0	0	0	40,269	40,269
Other comprehensive income (loss)	0	0	1,865	0	1,865
Balance as of December 31, 2020	675,222	58,510	633	163,401	222,544
Common and capital stock issued	7,225	12	0	0	12
Stock-based compensation expense	0	15,539	0	0	15,539
Income tax withholding related to vesting of restricted stock units and other	0	(10,273)	0	0	(10,273)
Repurchases of common and capital stock	(20,326)	(2,324)	0	(47,950)	(50,274)
Sale of interest in consolidated entities	0	310	0	0	310
Net income	0	0	0	76,033	76,033
Other comprehensive income (loss)	0	0	(2,256)	0	(2,256)
Balance as of December 31, 2021	662,121	\$ 61,774	\$ (1,623)	\$ 191,484	\$ 251,635

See accompanying notes.

Alphabet Inc.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In millions)

	Year Ended December 31,		
	2019	2020	2021
Operating activities			
Net income	\$ 34,343	\$ 40,269	\$ 76,033
Adjustments:			
Depreciation and impairment of property and equipment	10,856	12,905	11,555
Amortization and impairment of intangible assets	925	792	886
Stock-based compensation expense	10,794	12,991	15,376
Deferred income taxes	173	1,390	1,808
Gain on debt and equity securities, net	(2,798)	(6,317)	(12,270)
Other	(592)	1,267	(213)
Changes in assets and liabilities, net of effects of acquisitions:			
Accounts receivable	(4,340)	(6,524)	(9,095)
Income taxes, net	(3,128)	1,209	(625)
Other assets	(621)	(1,330)	(1,846)
Accounts payable	428	694	283
Accrued expenses and other liabilities	7,170	5,504	7,304
Accrued revenue share	1,273	1,639	1,682
Deferred revenue	37	635	774
Net cash provided by operating activities	54,520	65,124	91,652
Investing activities			
Purchases of property and equipment	(23,548)	(22,281)	(24,640)
Purchases of marketable securities	(100,315)	(136,576)	(135,196)
Maturities and sales of marketable securities	97,825	132,906	128,294
Purchases of non-marketable securities	(1,932)	(7,175)	(2,838)
Maturities and sales of non-marketable securities	405	1,023	934
Acquisitions, net of cash acquired, and purchases of intangible assets	(2,515)	(738)	(2,618)
Other investing activities	589	68	541
Net cash used in investing activities	(29,491)	(32,773)	(35,523)
Financing activities			
Net payments related to stock-based award activities	(4,765)	(5,720)	(10,162)
Repurchases of common and capital stock	(18,396)	(31,149)	(50,274)
Proceeds from issuance of debt, net of costs	317	11,761	20,199
Repayments of debt	(585)	(2,100)	(21,435)
Proceeds from sale of interest in consolidated entities, net	220	2,800	310
Net cash used in financing activities	(23,209)	(24,408)	(61,362)
Effect of exchange rate changes on cash and cash equivalents	(23)	24	(287)
Net increase (decrease) in cash and cash equivalents	1,797	7,967	(5,520)
Cash and cash equivalents at beginning of period	16,701	18,498	26,465
Cash and cash equivalents at end of period	<u>\$ 18,498</u>	<u>\$ 26,465</u>	<u>\$ 20,945</u>
Supplemental disclosures of cash flow information			
Cash paid for income taxes, net of refunds	\$ 8,203	\$ 4,990	\$ 13,412

See accompanying notes.

Alphabet Inc.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1. Summary of Significant Accounting Policies

Google was incorporated in California in September 1998 and re-incorporated in the State of Delaware in August 2003. In 2015, we implemented a holding company reorganization, and as a result, Alphabet Inc. ("Alphabet") became the successor issuer to Google.

Basis of Consolidation

The consolidated financial statements of Alphabet include the accounts of Alphabet and entities consolidated under the variable interest and voting models. All intercompany balances and transactions have been eliminated.

Use of Estimates

Preparation of consolidated financial statements in conformity with GAAP requires us to make estimates and assumptions that affect the amounts reported and disclosed in the financial statements and the accompanying notes. Actual results could differ materially from these estimates due to uncertainties, including the effects of COVID-19. On an ongoing basis, we evaluate our estimates, including discount rates, investee revenues those related to the allowance for credit losses; fair values of financial instruments, intangible assets, and costs, goodwill; useful lives of intangible assets and comparable market data of private property and public companies, equipment; income taxes; and contingent liabilities, among others. When we base our assessment indicates estimates on assumptions, both historical and forward looking, that an impairment exists, we write down are believed to be reasonable, and the investment to its fair value.

Change in Accounting Estimate results of which form the basis for making judgments about the carrying values of assets and liabilities.

In January 2021, we completed an assessment of the useful lives of our servers and network equipment and determined we should adjust adjusted the estimated useful life of our servers from three years to four years and the estimated useful life of certain network equipment from three years to five years. This change in accounting estimate will be was effective beginning in fiscal year 2021. For assets that are in-service Based on the carrying value of servers and certain network equipment as of December 31, 2020, we expect operating results to be favorably impacted by approximately \$2.1 billion for the full fiscal year 2021. The effect of the change may be different due to our capital investments and those acquired during the fiscal year 2021.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to financial market risks, including changes in foreign currency exchange rates, interest rates, and equity investment risks.

Foreign Currency Exchange Risk

We transact business globally in multiple currencies. Our international revenues, as well as costs and expenses denominated in foreign currencies, expose us to the risk of fluctuations in foreign currency exchange rates against the U.S. dollar. Principal currencies hedged included the Australian dollar, British pound, Canadian dollar, Euro and Japanese yen. For the purpose of analyzing foreign currency exchange risk, we considered the historical trends in foreign currency exchange rates and determined that it was reasonably possible that adverse changes in exchange rates of 10% could be experienced in the near term.

We use foreign exchange forward contracts to offset the foreign exchange risk on our assets and liabilities denominated in currencies other than the functional currency of the subsidiary. These forward contracts reduce, but do not entirely eliminate, ended December 31, 2021, the effect of foreign currency this change in estimate was a reduction in depreciation expense of \$2.6 billion and an increase in net income of \$2.0 billion, or \$3.02 per basic share and \$2.98 per diluted share, for the year ended December 31, 2021.

Revenue Recognition

Revenues are recognized when control of the promised goods or services is transferred to our customers, and the collectibility of an amount that we expect in exchange rate movements for those goods or services is probable. Sales and other similar taxes are excluded from revenues.

Advertising Revenues

We generate advertising revenues primarily by delivering advertising on:

- Google Search and other properties, including revenues from traffic generated by search distribution partners who use Google.com as their default search in browsers, toolbars, etc. and other Google owned and operated properties like Gmail, Google Maps, and Google Play;
- YouTube properties; and
- Google Network properties, including revenues from Google Network properties participating in AdMob, AdSense, and Google Ad Manager.

Our customers generally purchase advertising inventory through Google Ads, Google Ad Manager, and Google Marketing Platform, among others.

We offer advertising by delivering both performance and brand advertising. We recognize revenues for performance advertising when a user engages with the advertisement, such as a click, a view, or a purchase. For brand advertising, we recognize revenues when the ad is displayed, or a user views the ad.

For ads placed on Google Network properties, we evaluate whether we are the principal (i.e., report revenues on a gross basis) or agent (i.e., report revenues on a net basis). Generally, we report advertising revenues for ads placed on Google Network properties on a gross basis, that is, the amounts billed to our assets and liabilities. The foreign currency gains and losses on the assets and liabilities customers are recorded as revenues, and amounts paid to Google Network partners are recorded as cost of revenues. Where we are the principal, we control the advertising inventory before it is transferred to our customers. Our control is evidenced by our sole ability to monetize the advertising inventory before it is transferred to our customers and is further supported by us being primarily responsible to our customers and having a level of discretion in other income (expense), net, which are offset by the gains and losses on the forward contracts.

If an adverse 10% foreign currency exchange rate change was applied to total monetary assets, liabilities, and commitments denominated in currencies other than the functional currencies at the balance sheet date, it would have resulted in an adverse effect on income before income taxes of approximately \$8 million and \$497 million as of establishing pricing.

December 31, 2019 Google Cloud Revenues

Google Cloud revenues consist of revenues from:

- Google Cloud Platform, which includes fees for infrastructure, platform, and 2020, respectively, after consideration other services;
- Google Workspace, which includes fees for cloud-based collaboration tools for enterprises, such as Gmail, Docs, Drive, Calendar, and Meet; and
- other enterprise services.

Our cloud services are generally provided on either a consumption or subscription basis and may have contract terms longer than a year. Revenues related to cloud services provided on a consumption basis are recognized when the customer utilizes the services, based on the quantity of services consumed. Revenues related to cloud services provided on a subscription basis are recognized ratably over the contract term as the customer receives and consumes the benefits of the effect cloud services.

Google Other Revenues

Google other revenues consist of foreign exchange revenues from:

- Google Play, which includes sales of apps and in-app purchases and digital content sold in the Google Play store;
- hardware, which includes sales of Fitbit wearable devices, Google Nest home products, and Pixel phones;
- YouTube non-advertising, which includes YouTube Premium and YouTube TV subscriptions; and
- other products and services.

As it relates to Google other revenues, the most significant judgment is determining whether we are the principal or agent for app sales and in-app purchases through the Google Play store. We report revenues from these transactions on a net basis because our performance obligation is to facilitate a transaction between app developers and end users, for which we earn a service fee.

Arrangements with Multiple Performance Obligations

Our contracts with customers may include multiple performance obligations. For such arrangements, we allocate revenues to each performance obligation based on its relative standalone selling price. We generally determine standalone selling prices based on the prices charged to customers or using expected cost plus margin.

Customer Incentives and Credits

Certain customers receive cash-based incentives or credits, which are accounted for as variable consideration. We estimate these amounts based on the expected amount to be provided to customers and reduce revenues. We believe that there will not be significant changes to our estimates of variable consideration.

Sales Commissions

We expense sales commissions when incurred and when the amortization period (the period of the expected benefit) is one year or less. We recognize an asset for certain sales commissions if we expect the period of benefit of these costs to exceed one year and recognize the expense over the amortization period. These costs are recorded within sales and marketing expenses.

Cost of Revenues

Cost of revenues consists of TAC and other costs of revenues.

- TAC includes:
 - Amounts paid to our distribution partners who make available our search access points and services. Our distribution partners include browser providers, mobile carriers, original equipment manufacturers, and software developers.
 - Amounts paid to Google Network partners primarily for ads displayed on their properties.
- Other cost of revenues includes:
 - Content acquisition costs, which are payments to content providers from whom we license video and other content for distribution on YouTube and Google Play (we pay fees to these content providers based on revenues generated or a flat fee).

Alphabet Inc.

- Expenses associated with our data centers (including bandwidth, compensation expenses, depreciation, energy, and other equipment costs) as well as other operations costs (such as content review as well as customer and product support costs).
- Inventory and other costs related to the hardware we sell.

Software Development Costs

We expense software development costs, including costs to develop software products or the software component of products to be sold, leased, or marketed to external users, before technological feasibility is reached. Technological feasibility is typically reached shortly before the release of such products. As a result, development costs that meet the criteria for capitalization were not material for the periods presented.

Software development costs also include costs to develop software to be used solely to meet internal needs and cloud based applications used to deliver our services. We capitalize development costs related to these software applications once the preliminary project stage is complete and it is probable that the project will be completed and the software will be used to perform the function intended. Costs capitalized for developing such software applications were not material for the periods presented.

Stock-based Compensation

Stock-based compensation primarily consists of Alphabet restricted stock units (RSUs). RSUs are equity classified and measured at the fair market value of the underlying stock at the grant date. We recognize RSU expense using the straight-line attribution method over the requisite service period and account for forfeitures as they occur.

For RSUs, shares are issued on the vesting dates net of the applicable statutory income tax withholding to be paid by us on behalf of our employees. As a result, fewer shares are issued than the number of RSUs outstanding, and the income tax withholding is recorded as a reduction to additional paid-in capital.

Additionally, stock-based compensation also includes other stock-based awards, such as performance stock units (PSUs) that include market conditions and awards that may be settled in place for cash or the stock of certain Other Bets. PSUs and certain Other Bet awards are equity classified and expense is recognized over the requisite service period. Certain Other Bet awards are liability classified and remeasured at fair value through settlement. The fair value of Other Bet awards is based on the equity valuation of the respective Other Bet.

Advertising and Promotional Expenses

We expense advertising and promotional costs in the period in which they are incurred. For the years ended December 31, 2019, 2020 and 2020, 2021, advertising and promotional expenses totaled approximately \$6.8 billion, \$5.4 billion, and \$7.9 billion, respectively.

Performance Fees

Performance fees refer to compensation arrangements with payouts based on realized returns from certain investments. We recognize compensation expense based on the estimated payouts, which may result in expense recognized before investment returns are realized, and may require the use foreign currency forwards and option contracts, including collars (an option strategy comprised of a combination of purchased and written options) to protect our forecasted U.S. dollar-equivalent earnings from changes in foreign currency exchange rates. When the U.S. dollar strengthens, gains from foreign currency options and forwards reduce the foreign currency losses related to our earnings. When the U.S. dollar weakens, losses from foreign currency collars and forwards offset the foreign currency gains related to our earnings. These hedging contracts reduce, but do not entirely eliminate, the effect of foreign currency exchange rate movements. We designate these contracts as cash flow hedges for accounting purposes. We reflect the gains or losses of foreign currency spot rate changes unobservable inputs. Performance fees are recorded as a component of AOCI and subsequently reclassify them into revenues to offset the hedged exposures as they occur.

If the U.S. dollar weakened by 10% as of December 31, 2019 and 2020, the amount recorded in AOCI related to our foreign exchange contracts before tax effect would have been approximately \$1.1 billion and \$912 million lower as of December 31, 2019 and 2020, respectively. The change in the value recorded in AOCI would be expected to offset a corresponding foreign currency change in forecasted hedged revenues when recognized.

We use foreign exchange forward contracts designated as net investment hedges to hedge the foreign currency risks related to our investment in foreign subsidiaries. These forward contracts serve to offset the foreign currency translation risk from our foreign operations.

If the U.S. dollar weakened by 10% other income (expense), the amount recorded in cumulative translation adjustment ("CTA") within AOCI related to our net investment hedge would have been approximately \$936 million and \$1 billion lower as of December 31, 2019 and 2020, respectively. The change in value recorded in CTA would be expected to offset a corresponding foreign currency translation gain or loss from our investment in foreign subsidiaries. net.

Interest Rate Risk

Our Corporate Treasury investment strategy is to achieve a return that will allow us to preserve capital and maintain liquidity. We invest primarily in debt securities, including those of the U.S. government and its agencies, corporate debt securities, mortgage-backed securities, money market and other funds, municipal securities, time deposits, asset backed securities, and debt instruments issued by foreign governments. By policy, we limit the amount of credit exposure to any one issuer. Our investments in both fixed rate and floating rate interest earning securities carry a degree of interest rate risk. Fixed rate securities may have their fair market value adversely affected due to a rise in interest rates, while floating rate securities may produce less income than predicted if interest rates fall. Unrealized gains or losses on our marketable debt securities are primarily due to interest rate fluctuations as compared to interest rates at the time of purchase. For certain fixed and variable rate debt securities, we have elected the fair value option for which changes in fair value are recorded in other income (expense), net. We measure securities for which we have not elected the fair value option at fair value with gains and losses recorded in AOCI until the securities are sold, less any expected credit losses.

We use value-at-risk ("VaR") (VaR) analysis to determine the potential effect of fluctuations in interest rates on the value of our marketable debt security portfolio. The VaR is the expected loss in fair value, for a given confidence interval, for our investment portfolio due to adverse movements in interest rates. We use a variance/covariance VaR model with 95% confidence interval. The estimated one-day loss in fair value of our marketable debt securities as of December 31, 2019, December 31, 2020 and 2020, 2021 are shown below (in millions):

Risk Category - Interest Rate	As of December 31,		12-Month Average As of December 31,	
	2019	2020	2019	2020
	\$ 104	\$ 144	\$ 90	\$ 145

Risk Category - Interest Rate	As of December 31,		12-Month Average As of December 31,	
	2020	2021	2020	2021
	\$ 144	\$ 139	\$ 145	\$ 148

Actual future gains and losses associated with our marketable debt security portfolio may differ materially from the sensitivity analyses performed as of **December 31, 2019**, **December 31, 2020** and **2020, 2021** due to the inherent limitations associated with predicting the timing and amount of changes in interest rates and our actual exposures and positions. VaR analysis is not intended to represent actual losses but is used as a risk estimation.

Equity Investment Risk

Our marketable and non-marketable equity securities are subject to a wide variety of market-related risks that could substantially reduce or increase the fair value of our holdings.

Our marketable equity securities are publicly traded stocks or funds and our non-marketable equity securities are investments in privately held companies, some of which are in the startup or development stages.

We record **our** marketable equity securities not accounted for under the equity method at fair value based on readily determinable market values, of which publicly traded stocks and mutual funds are subject to market price volatility, and represent **\$3.3 billion**, **\$5.9 billion** and **\$5.9 billion**, **\$7.8 billion** of our investments as of **December 31, 2019**, **December 31, 2020** and **2020, 2021**, respectively. A hypothetical adverse price change of **30%**, **10%** on our **December 31, 2020**, **December 31, 2021** balance, which could be experienced in the near term, would decrease the fair value of **our** marketable equity securities by **\$1.8 billion**, **\$780 million**. From time to time, we may enter into derivatives to hedge the market price risk on certain of our marketable equity securities.

Our non-marketable equity securities not accounted for under the equity method are adjusted to fair value for observable transactions for identical or similar investments of the same issuer or impairment (referred to as the measurement alternative). The fair value measured at the time of the observable transaction is not necessarily an indication of the current fair value as of the balance sheet date. These investments, especially those that are in the early stages, are inherently risky because the technologies or products these companies have under development are typically in the early phases and may never materialize, and they may experience a decline in financial condition, which could result in a loss of a substantial part of our investment in these companies. The success of our investment in any private company is also typically dependent on the likelihood of our ability to realize appreciation in the value of **our** investments through liquidity events such as public offerings, acquisitions, private sales or other market events. As of **December 31, 2019**, **December 31, 2020** and **2020, 2021**, the carrying value of our non-marketable equity securities, which were accounted for under the measurement alternative, was **\$11.4 billion**, **\$18.9 billion** and **\$18.9 billion**, **\$27.6 billion**, respectively. Valuations of our equity investments in private companies are inherently more complex due to the lack of readily available market data. Volatility in the global economic climate and financial markets could result in a significant impairment charge relating to our non-marketable equity securities. Changes in valuation of non-marketable equity securities may not directly correlate with changes in valuation of marketable equity securities. Additionally, observable transactions at lower valuations could result in significant losses on our non-marketable equity securities. The effect of COVID-19 on our impairment assessment requires significant judgment due to the uncertainty around the duration and severity of the **impact**, **effect**.

The carrying values of our equity method investments, which totaled approximately **\$1.3 billion**, **\$1.4 billion** and **\$1.4 billion**, **\$1.5 billion** as of **December 31, 2019**, **December 31, 2020** and **2020, 2021**, respectively, generally do not fluctuate based on market price **changes**, **however changes**. However, these investments could be impaired if the carrying value exceeds the fair value and is not expected to recover.

For further information about our equity investments, **please refer to see** Note 1 and Note 3 of the Notes to Consolidated Financial Statements included in **Part II**, **Item 8** of this Annual Report on Form 10-K.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Alphabet Inc.

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Alphabet Inc.

REPORT OF ERNST & YOUNG LLP, INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Alphabet Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Alphabet Inc. (the Company) as of December 31, 2019, December 31, 2020 and 2021, the related consolidated statements of income, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2020, December 31, 2021, and the related notes and financial statement schedule listed in the Index at Item 15 (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, 2019, December 31, 2020 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2020, December 31, 2021, 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, 2020, December 31, 2021, 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 2, 2021, February 1, 2022 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 U.S. 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.

Alphabet Inc.

Loss Contingencies

Description of the Matter The Company is regularly subject to claims, suits, regulatory and government investigations, and other proceedings involving competition, intellectual property, privacy, consumer protection, tax and related compliance, labor and employment, commercial disputes, content generated by its users, goods and services offered by advertisers or publishers using their platforms, personal injury, consumer protection, and other matters. As described in Note 10 to the consolidated financial statements "Commitments" "Contingencies" such claims, suits, regulatory and Contingencies" such claims government investigations, and other proceedings could result in adverse consequences.

Significant judgment is required to determine both the likelihood, and the estimated amount, of a loss related to such matters. Auditing management's accounting for and disclosure of loss contingencies from these matters involved challenging and subjective auditor judgment in assessing the Company's evaluation of the probability of a loss, and the estimated amount or range of loss.

How We Addressed the Matter in Our Audit We tested relevant controls over the identified risks associated with management's accounting for and disclosure of these matters. This included controls over management's assessment of the probability of incurrence of a loss and whether the loss or range of loss was reasonably estimable and the development of related disclosures.

Our audit procedures included gaining an understanding of previous rulings issued by regulators and the status of ongoing lawsuits, reviewing letters addressing the matters from internal and external legal counsel, meeting with internal legal counsel to discuss the allegations, and obtaining a representation letter from management on these matters. We also evaluated the Company's disclosures in relation to these matters.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1999.

San Jose, California

February 2, 2021 1, 2022

Alphabet Inc.

REPORT OF ERNST & YOUNG LLP, INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Alphabet Inc.

Opinion on Internal Control over Financial Reporting

We have audited Alphabet Inc.'s internal control over financial reporting as of December 31, 2020 December 31, 2021, 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, Alphabet Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2020 December 31, 2021, 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 2020 2021 consolidated financial statements of the Company and our report dated February 2, 2021 February 1, 2022 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 U.S. 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

San Jose, California

February 2, 2021 1, 2022

Alphabet Inc.

Alphabet Inc.

CONSOLIDATED BALANCE SHEETS

(In millions, except share amounts which are reflected in thousands, and par value per share amounts)

	As of December 31, 2019	As of December 31, 2020
Assets		
Current assets:		
Cash and cash equivalents	\$ 18,498	\$ 26,465
Marketable securities	101,177	110,229
Total cash, cash equivalents, and marketable securities	119,675	136,694
Accounts receivable, net	25,326	30,930
Income taxes receivable, net	2,166	454
Inventory	999	728
Other current assets	4,412	5,490
Total current assets	152,578	174,296
Non-marketable investments	13,078	20,703
Deferred income taxes	721	1,084
Property and equipment, net	73,646	84,749
Operating lease assets	10,941	12,211
Intangible assets, net	1,979	1,445
Goodwill	20,624	21,175
Other non-current assets	2,342	3,953
Total assets	\$ 275,909	\$ 319,616
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	\$ 5,561	\$ 5,589
Accrued compensation and benefits	8,495	11,086
Accrued expenses and other current liabilities	23,067	28,631
Accrued revenue share	5,916	7,500
Deferred revenue	1,908	2,543
Income taxes payable, net	274	1,485
Total current liabilities	45,221	56,834
Long-term debt	4,554	13,932
Deferred revenue, non-current	358	481
Income taxes payable, non-current	9,885	8,849
Deferred income taxes	1,701	3,561
Operating lease liabilities	10,214	11,146
Other long-term liabilities	2,534	2,269
Total liabilities	74,467	97,072
Commitments and Contingencies (Note 10)		
Stockholders' equity:		
Convertible preferred stock, \$0.001 par value per share, 100,000 shares authorized; no shares issued and outstanding	0	0
Class A and Class B common stock, and Class C capital stock and additional paid-in capital, \$0.001 par value per share: 15,000,000 shares authorized (Class A 9,000,000, Class B 3,000,000, Class C 3,000,000); 688,335 (Class A 299,828, Class B 46,441, Class C 342,066) and 675,222 (Class A 300,730, Class B 45,843, Class C 328,649) shares issued and outstanding	50,552	58,510
Accumulated other comprehensive income (loss)	(1,232)	633
Retained earnings	152,122	163,401
Total stockholders' equity	201,442	222,544
Total liabilities and stockholders' equity	\$ 275,909	\$ 319,616

	As of December 31,	
	2020	2021
Assets		
Current assets:		
Cash and cash equivalents	\$ 26,465	\$ 20,945

Marketable securities	110,229	118,704
Total cash, cash equivalents, and marketable securities	136,694	139,649
Accounts receivable, net	30,930	39,304
Income taxes receivable, net	454	966
Inventory	728	1,170
Other current assets	5,490	7,054
Total current assets	174,296	188,143
Non-marketable securities	20,703	29,549
Deferred income taxes	1,084	1,284
Property and equipment, net	84,749	97,599
Operating lease assets	12,211	12,959
Intangible assets, net	1,445	1,417
Goodwill	21,175	22,956
Other non-current assets	3,953	5,361
Total assets	<u>\$ 319,616</u>	<u>\$ 359,268</u>
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	\$ 5,589	\$ 6,037
Accrued compensation and benefits	11,086	13,889
Accrued expenses and other current liabilities	28,631	31,236
Accrued revenue share	7,500	8,996
Deferred revenue	2,543	3,288
Income taxes payable, net	1,485	808
Total current liabilities	56,834	64,254
Long-term debt	13,932	14,817
Deferred revenue, non-current	481	535
Income taxes payable, non-current	8,849	9,176
Deferred income taxes	3,561	5,257
Operating lease liabilities	11,146	11,389
Other long-term liabilities	2,269	2,205
Total liabilities	97,072	107,633
Contingencies (Note 10)		
Stockholders' equity:		
Preferred stock, \$0.001 par value per share, 100,000 shares authorized; no shares issued and outstanding	0	0
Class A and Class B common stock, and Class C capital stock and additional paid-in capital, \$0.001 par value per share: 15,000,000 shares authorized (Class A 9,000,000, Class B 3,000,000, Class C 3,000,000); 675,222 (Class A 300,730, Class B 45,843, Class C 328,649) and 662,121 (Class A 300,737, Class B 44,665, Class C 316,719) shares issued and outstanding	58,510	61,774
Accumulated other comprehensive income (loss)	633	(1,623)
Retained earnings	163,401	191,484
Total stockholders' equity	222,544	251,635
Total liabilities and stockholders' equity	<u>\$ 319,616</u>	<u>\$ 359,268</u>

See accompanying notes.

Alphabet Inc.

Alphabet Inc.
CONSOLIDATED STATEMENTS OF INCOME
(In millions, except per share amounts)

Year Ended December 31,

	2018	2019	2020
Revenues	\$ 136,819	\$ 161,857	\$ 182,527
Costs and expenses:			
Cost of revenues	59,549	71,896	84,732
Research and development	21,419	26,018	27,573
Sales and marketing	16,333	18,464	17,946
General and administrative	6,923	9,551	11,052
European Commission fines	5,071	1,697	0
Total costs and expenses	109,295	127,626	141,303
Income from operations	27,524	34,231	41,224
Other income (expense), net	7,389	5,394	6,858
Income before income taxes	34,913	39,625	48,082
Provision for income taxes	4,177	5,282	7,813
Net income	\$ 30,736	\$ 34,343	\$ 40,269
Basic net income per share of Class A and B common stock and Class C capital stock	\$ 44.22	\$ 49.59	\$ 59.15
Diluted net income per share of Class A and B common stock and Class C capital stock	\$ 43.70	\$ 49.16	\$ 58.61

	Year Ended December 31,		
	2019	2020	2021
Revenues	\$ 161,857	\$ 182,527	\$ 257,637
Costs and expenses:			
Cost of revenues	71,896	84,732	110,939
Research and development	26,018	27,573	31,562
Sales and marketing	18,464	17,946	22,912
General and administrative	9,551	11,052	13,510
European Commission fines	1,697	0	0
Total costs and expenses	127,626	141,303	178,923
Income from operations	34,231	41,224	78,714
Other income (expense), net	5,394	6,858	12,020
Income before income taxes	39,625	48,082	90,734
Provision for income taxes	5,282	7,813	14,701
Net income	\$ 34,343	\$ 40,269	\$ 76,033
Basic net income per share of Class A and B common stock and Class C capital stock	\$ 49.59	\$ 59.15	\$ 113.88
Diluted net income per share of Class A and B common stock and Class C capital stock	\$ 49.16	\$ 58.61	\$ 112.20

See accompanying notes.

Alphabet Inc.

Alphabet Inc.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In millions)

	Year Ended December 31,		
	2018	2019	2020
Net income	\$ 30,736	\$ 34,343	\$ 40,269
Other comprehensive income (loss):			
Change in foreign currency translation adjustment	(781)	(119)	1,139

Available-for-sale investments:			
Change in net unrealized gains (losses)	88	1,611	1,313
Less: reclassification adjustment for net (gains) losses included in net income	(911)	(111)	(513)
Net change, net of tax benefit (expense) of \$156, \$(221), and \$(230)	(823)	1,500	800
Cash flow hedges:			
Change in net unrealized gains (losses)	290	22	42
Less: reclassification adjustment for net (gains) losses included in net income	98	(299)	(116)
Net change, net of tax benefit (expense) of \$(103), \$42, and \$11	388	(277)	(74)
Other comprehensive income (loss)	(1,216)	1,104	1,865
Comprehensive income	\$ 29,520	\$ 35,447	\$ 42,134

	Year Ended December 31,		
	2019	2020	2021
Net income	\$ 34,343	\$ 40,269	\$ 76,033
Other comprehensive income (loss):			
Change in foreign currency translation adjustment	(119)	1,139	(1,442)
Available-for-sale investments:			
Change in net unrealized gains (losses)	1,611	1,313	(1,312)
Less: reclassification adjustment for net (gains) losses included in net income	(111)	(513)	(64)
Net change, net of income tax benefit (expense) of \$(221), \$(230), and \$394	1,500	800	(1,376)
Cash flow hedges:			
Change in net unrealized gains (losses)	22	42	716
Less: reclassification adjustment for net (gains) losses included in net income	(299)	(116)	(154)
Net change, net of income tax benefit (expense) of \$42, \$11, and \$(122)	(277)	(74)	562
Other comprehensive income (loss)	1,104	1,865	(2,256)
Comprehensive income	\$ 35,447	\$ 42,134	\$ 73,777

See accompanying notes.

Alphabet Inc.

Alphabet Inc.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(In millions, except share amounts which are reflected in thousands)

	Class A and Class B Common Stock, Class C Capital Stock and				
	Class A and Class B Common Stock, Class C Capital Stock and Additional Paid-In Capital		Accumulated Other Comprehensive Income (Loss)	Retained Earnings	Total Stockhold Equity
	Shares	Amount			
Balance as of December 31, 2017	694,783	\$ 40,247	\$ (992)	\$ 113,247	\$
Cumulative effect of accounting change	0	0	(98)	(599)	
Common and capital stock issued	8,975	148	0	0	
Stock-based compensation expense	0	9,353	0	0	
Tax withholding related to vesting of restricted stock units	0	(4,782)	0	0	
Repurchases of capital stock	(8,202)	(576)	0	(8,499)	
Sale of interest in consolidated entities	0	659	0	0	
Net income	0	0	0	30,736	
Other comprehensive income (loss)	0	0	(1,216)	0	
Balance as of December 31, 2018	695,556	\$ 45,049	\$ (2,306)	\$ 134,885	\$

Cumulative effect of accounting change	0	0	(30)	(4)
Common and capital stock issued	8,120	202	0	0
Stock-based compensation expense	0	10,890	0	0
Tax Income tax withholding related to vesting of restricted stock units and other	0	(4,455)	0	0
Repurchases of capital stock	(15,341)	(1,294)	0	(17,102)
Sale of interest in consolidated entities	0	160	0	0
Net income	0	0	0	34,343
Other comprehensive income (loss)	0	0	1,104	0
Balance as of December 31, 2019	688,335	50,552	(1,232)	152,122
Common and capital stock issued	8,398	168	0	0
Stock-based compensation expense	0	13,123	0	0
Tax Income tax withholding related to vesting of restricted stock units and other	0	(5,969)	0	0
Repurchases of capital stock	(21,511)	(2,159)	0	(28,990)
Sale of interest in consolidated entities	0	2,795	0	0
Net income	0	0	0	40,269
Other comprehensive income (loss)	0	0	1,865	0
Balance as of December 31, 2020	675,222	\$ 58,510	633	163,401
Common and capital stock issued	58,510	7,225	12	0
Stock-based compensation expense	0	15,539	0	0
Income tax withholding related to vesting of restricted stock units and other	0	(10,273)	0	0
Repurchases of common and capital stock	(20,326)	(2,324)	0	(47,950)
Sale of interest in consolidated entities	0	310	0	0
Net income	0	0	0	76,033
Other comprehensive income (loss)	0	0	(2,256)	0
Balance as of December 31, 2021	662,121	\$ 633 61,774	\$ 163,401 (1,623)	\$ 222,544 191,484

See accompanying notes.

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Alphabet Inc.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In millions)

	Year Ended December 31,		
	2018	2019	2020
Operating activities			
Net income	\$ 30,736	\$ 34,343	\$
Adjustments:			
Depreciation and impairment of property and equipment	8,164	10,856	
Amortization and impairment of intangible assets	871	925	
Stock-based compensation expense	9,353	10,794	
Deferred income taxes	778	173	
Gain on debt and equity securities, net	(6,650)	(2,798)	
Other	(189)	(592)	
Changes in assets and liabilities, net of effects of acquisitions:			
Accounts receivable	(2,169)	(4,340)	
Income taxes, net	(2,251)	(3,128)	
Other assets	(1,207)	(621)	

Accounts payable	1,067	428	
Accrued expenses and other liabilities	8,614	7,170	
Accrued revenue share	483	1,273	
Deferred revenue	371	37	
Net cash provided by operating activities	47,971	54,520	
Investing activities			
Purchases of property and equipment	(25,139)	(23,548)	
Purchases of marketable securities	(50,158)	(100,315)	
Maturities and sales of marketable securities	48,507	97,825	
Purchases of non-marketable investments	(2,073)	(1,932)	
Maturities and sales of non-marketable investments	1,752	405	
Acquisitions, net of cash acquired, and purchases of intangible assets	(1,491)	(2,515)	
Other investing activities	98	589	
Net cash used in investing activities	(28,504)	(29,491)	
Financing activities			
Net payments related to stock-based award activities	(4,993)	(4,765)	
Repurchases of capital stock	(9,075)	(18,396)	
Proceeds from issuance of debt, net of costs	6,766	317	
Repayments of debt	(6,827)	(585)	
Proceeds from sale of interest in consolidated entities, net	950	220	
Net cash used in financing activities	(13,179)	(23,209)	
Effect of exchange rate changes on cash and cash equivalents	(302)	(23)	
Net increase in cash and cash equivalents	5,986	1,797	
Cash and cash equivalents at beginning of period	10,715	16,701	
Cash and cash equivalents at end of period	\$ 16,701	\$ 18,498	\$
Supplemental disclosures of cash flow information			
Cash paid for taxes, net of refunds	\$ 5,671	\$ 8,203	\$

	Year Ended December 31,		
	2019	2020	2021
Operating activities			
Net income	\$ 34,343	\$ 40,269	\$
Adjustments:			
Depreciation and impairment of property and equipment	10,856	12,905	
Amortization and impairment of intangible assets	925	792	
Stock-based compensation expense	10,794	12,991	
Deferred income taxes	173	1,390	
Gain on debt and equity securities, net	(2,798)	(6,317)	
Other	(592)	1,267	
Changes in assets and liabilities, net of effects of acquisitions:			
Accounts receivable	(4,340)	(6,524)	
Income taxes, net	(3,128)	1,209	
Other assets	(621)	(1,330)	
Accounts payable	428	694	
Accrued expenses and other liabilities	7,170	5,504	
Accrued revenue share	1,273	1,639	
Deferred revenue	37	635	
Net cash provided by operating activities	54,520	65,124	
Investing activities			
Purchases of property and equipment	(23,548)	(22,281)	
Purchases of marketable securities	(100,315)	(136,576)	

Maturities and sales of marketable securities	97,825	132,906	
Purchases of non-marketable securities	(1,932)	(7,175)	
Maturities and sales of non-marketable securities	405	1,023	
Acquisitions, net of cash acquired, and purchases of intangible assets	(2,515)	(738)	
Other investing activities	589	68	
Net cash used in investing activities	(29,491)	(32,773)	
Financing activities			
Net payments related to stock-based award activities	(4,765)	(5,720)	
Repurchases of common and capital stock	(18,396)	(31,149)	
Proceeds from issuance of debt, net of costs	317	11,761	
Repayments of debt	(585)	(2,100)	
Proceeds from sale of interest in consolidated entities, net	220	2,800	
Net cash used in financing activities	(23,209)	(24,408)	
Effect of exchange rate changes on cash and cash equivalents	(23)	24	
Net increase (decrease) in cash and cash equivalents	1,797	7,967	
Cash and cash equivalents at beginning of period	16,701	18,498	
Cash and cash equivalents at end of period	\$ 18,498	\$ 26,465	\$
Supplemental disclosures of cash flow information			
Cash paid for income taxes, net of refunds	\$ 8,203	\$ 4,990	\$

See accompanying notes.

Alphabet

Alphabet Inc.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1. Nature of Operations and Summary of Significant Accounting Policies

Nature of Operations

Google was incorporated in California in September 1998 and re-incorporated in the State of Delaware in August 2003. In 2015, we implemented a holding company reorganization and as a result, Alphabet Inc. ("Alphabet") became the successor issuer to Google.

We generate revenues by delivering relevant, cost-effective online advertising, cloud-based solutions that provide customers with platforms, collaboration tools and services, and sales of other products and services, such as apps and in-app purchases, digital content and subscriptions for digital content, and hardware.

Basis of Consolidation

The consolidated financial statements of Alphabet include the accounts of Alphabet and entities consolidated under the variable interest and voting models. All intercompany balances and transactions have been eliminated.

Use of Estimates

Preparation of consolidated financial statements in conformity with generally accepted accounting principles in the United States ("GAAP") requires us to make estimates and assumptions that affect the amounts reported and disclosed in the financial statements and the accompanying notes. Actual results could differ materially from these estimates due to uncertainties, including the effects of COVID-19. On an ongoing basis, we evaluate our estimates, including those related to the allowance for credit losses, fair value of financial instruments, (including non-marketable equity securities), intangible assets, and goodwill, useful lives of intangible assets and property and equipment, equity-based compensation, income taxes, and contingent liabilities, among others. We base our estimates on assumptions, both historical and forward looking, that are believed to be reasonable, the results of which form the basis for making judgments about the carrying values of assets and liabilities.

As of December 31, 2020 the impact of COVID-19 continues to unfold and the extent of the impact will depend on a number of factors, including the duration and severity of the pandemic; the uneven impact to certain industries; advances in testing, treatment and prevention; and the macroeconomic impact of government measures to contain the spread of the virus and related government stimulus measures. As a result, certain of our estimates and assumptions, including the allowance for credit losses for accounts receivable, the recoverability of long-lived assets, the worthiness of customers entering into revenue arrangements, the valuation of non-marketable equity securities, including our impairment assessment, and the fair values of our equity-based compensation instruments require increased judgment and carry a higher degree of variability and volatility that could result in material changes to our estimates in future periods.

In January 2021, we completed an assessment of the useful lives of our servers and network equipment and determined we should adjust the estimated useful lives of servers from three years to four years and the estimated useful life of certain network equipment from three years to five years. This change in accounting estimate will be applied prospectively beginning in fiscal year 2021. Based on the carrying value of servers and certain network equipment as of December 31, 2020 and those acquired during the year ended December 31, 2020, the change in accounting estimate will result in an increase in net income of approximately \$1.2 billion for the year ended December 31, 2021.

the effect of this change in estimate was a reduction in depreciation expense of \$2.6 billion and an increase in net income of \$2.0 billion, or \$3.02 per basic share and \$2.98 per diluted share for the year ended December 31, 2021.

Revenue Recognition

Revenues are recognized when control of the promised goods or services is transferred to our customers, and the collectibility of an amount that we expect in exchange for the goods or services is probable. Sales and other similar taxes are excluded from revenues.

Advertising Revenues

We generate advertising revenues primarily by delivering advertising on:

- Google Search and other properties, including revenues from traffic generated by search distribution partners who use Google.com as their default search in browsers, toolbars, etc. and other Google Search app, owned and operated properties like Gmail, Google Play, Gmail Maps, and Google Maps; Play;
- YouTube properties; and
- Google Network properties, including revenues from Google Network properties participating in AdMob, AdSense, and Google Network Members' properties. Ad Manager.

Our customers generally purchase advertising inventory through Google Ads, Google Ad Manager, and Google Marketing Platform, among others.

We offer advertising by delivering both performance and brand advertising. We recognize revenues for performance advertising when a user engages with the advertisement by clicking, a view, or a purchase. For brand advertising, we recognize revenues when the ad is displayed, or a user views the ad.

For ads placed on Google Network Members' properties, we evaluate whether we are the principal (i.e., report revenues on a gross basis) or agent (i.e., report revenues on a net basis). Generally, we report advertising revenues

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for ads placed on Google Network Members' properties on a gross basis, that is, the amounts billed to our customers are recorded as revenues, and amounts paid to Google Network Members partners are recorded as cost of revenues. Where we are the principal, we control the advertising inventory before it is transferred to our customers. Our control is evident from our sole ability to monetize the advertising inventory before it is transferred to our customers and is further supported by us being primarily responsible to our customers and having a high level of discretion in establishing pricing.

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Google Cloud Revenues

Google Cloud revenues consist primarily of fees received for revenues from:

- Google Cloud Platform, services (which includes fees for infrastructure, and data analytics platform, products and other services) and services;
- Google Workspace, (formerly G Suite) which includes fees for cloud-based collaboration tools for enterprises, such as Gmail, Docs, Drive, Calendar, and Meet; and
- other enterprise services.

Our cloud services are generally provided on either a consumption or subscription basis. Revenues related to cloud services provided on a consumption basis are recognized when the customer utilizes the services, based on the quantity of services consumed. Revenues related to cloud services provided on a subscription basis are recognized ratably over the contract term as the customer receives and consumes the benefits of the cloud services.

Google Other Revenues

Google other revenues and Other Bets revenues consist primarily of revenues from:

- Google Play, which includes revenues from sales of apps and in-app purchases (which we recognize net of payout to developers) and digital content sold in the Google Play store;
- hardware, including sales of Fitbit wearable devices, Google Nest home products, Pixelbooks, and Pixel phones and other devices; phones;
- YouTube non-advertising, services including YouTube premium Premium and YouTube TV subscriptions and other services; subscriptions; and
- other products and services.

As it relates to Google other revenues, the most significant judgment is determining whether we are the principal or agent for app sales and in-app purchases through the Google Play store. We report revenues from these transactions on a net basis because our performance obligation is to facilitate a transaction between app developers and end users, for which we receive a commission. Consequently, the portion of the gross amount billed to end users that is remitted to app developers is not reflected as revenues. service fee.

Arrangements with Multiple Performance Obligations

Our contracts with customers may include multiple performance obligations. For such arrangements, we allocate revenues to each performance obligation based on its standalone selling price. We generally determine standalone selling prices based on the prices charged to customers or using expected cost plus margin.

Customer Incentives and Credits

Certain customers receive cash-based incentives or credits, which are accounted for as variable consideration. We estimate these amounts based on the expected amount provided to customers and reduce revenues. We believe that there will not be significant changes to our estimates of variable consideration.

Sales Commissions

We expense sales commissions when incurred and when the amortization period (the period of the expected benefit) is one year or less. We recognize an asset for certain commissions if we expect the period of benefit of these costs to exceed one year and amortize it recognize the expense over the period of expected benefit. amortization period costs are recorded within sales and marketing expenses.

Cost of Revenues

Cost of revenues consists of TAC and other costs of revenues.

- TAC represents the amounts includes:
 - Amounts paid to our distribution partners who make available our search access points and services and amounts paid to Google Network Members primarily displayed on their properties. services. Our distribution partners include browser providers, mobile carriers, original equipment manufacturers, and software developers.
 - Amounts paid to Google Network partners primarily for ads displayed on their properties.
- Other cost of revenues (which is the cost of revenues excluding TAC) includes the following: includes:
 - □ Content acquisition costs, primarily related to which are payments to content providers from whom we license video and other content for distribution on our advertising and subscription services and Google Play. We Play (we pay fees to these content providers based on revenues generated or a flat fee; fee).

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- □ Expenses associated with our data centers and other operations (including bandwidth, compensation expense (including SBC), expenses, depreciation, energy, and equipment costs); as well as other operations costs (such as content review as well as customer and product support costs).
- □ Inventory and other costs related costs for to the hardware we sell.

Software Development Costs

We expense software development costs, including costs to develop software products or the software component of products to be sold, leased, or marketed to external customers before technological feasibility is reached. Technological feasibility is typically reached shortly before the release of such products and as products. As a result, development costs that do not meet the criteria for capitalization were not material for the periods presented.

Software development costs also include costs to develop software to be used solely to meet internal needs and cloud based applications used to deliver our services. We capitalize development costs related to these software applications once the preliminary project stage is complete and it is probable that the project will be completed and the software will be used to perform the function intended. Costs capitalized for developing such software applications were not material for the periods presented.

Stock-based Compensation

Stock-based compensation primarily consists of Alphabet restricted stock units ("RSUs") (RSUs). RSUs are equity classified and measured at the fair market value of the underlying stock at the grant date. We recognize RSU expense using the straight-line attribution method over the requisite service period and account for forfeitures as they occur.

For RSUs, shares are issued on the vesting dates net of the applicable statutory income tax withholding to be paid by us on behalf of our employees. As a result, fewer shares are issued than the number of RSUs outstanding, and the income tax withholding is recorded as a reduction to additional paid-in capital.

Additionally, stock-based compensation also includes other stock-based awards, such as performance stock units ("PSUs") (PSUs) that include market conditions and awards that may be settled in cash or the stock of certain Other Bets. PSUs and certain Other Bet awards are equity classified and expense is recognized over the requisite service period. Certain PSU awards are liability classified and remeasured at fair value through settlement. The fair value of Other Bet awards is based on the equity valuation of the respective Other Bet.

Advertising and Promotional Expenses

We expense advertising and promotional costs in the period in which they are incurred. For the years ended December 31, 2018, December 31, 2019, 2019 2020 and 2020, advertising and promotional expenses totaled approximately \$6.4 billion \$6.8 billion, \$6.8 billion \$5.4 billion, and \$5.4 billion \$7.9 billion, respectively.

Performance Fees

Performance fees refer to compensation arrangements with payouts based on realized investment returns. returns from certain investments. We recognize compensation based on the estimated payouts, which may result in expense recognized before investment returns are realized. realized, and may require the use of unobservable inputs. Performance fees which are primarily related to gains on equity securities, are recorded as a component of other income (expense), net.

Certain Risks and Concentrations

Our revenues are primarily derived from online advertising, the market for which is highly competitive and rapidly changing. In addition, our revenues are generated from a number of markets in countries around the world. Significant changes in this industry or changes in customer buying or advertiser spending behavior could adversely affect our operating results.

No individual customer or groups of affiliated customers represented more than 10% of our revenues in 2018, 2019, or 2020. In 2018, 2019, and 2020, we generated approximately 46%, 46%, and 47% of our revenues, respectively, from customers based in the U.S.

We are subject to concentrations of credit risk principally from cash and cash equivalents, marketable securities, foreign exchange contracts, and accounts receivable. We manage credit risk exposure through timely assessment of our counterparty creditworthiness, credit limits and use of collateral management.

Cash equivalents and marketable securities consist primarily of time deposits, money market and other funds, highly liquid debt instruments of the U.S. government and its agencies, and debt instruments issued by foreign governments, debt instruments issued by municipalities in the U.S., corporate debt securities, mortgage-backed securities, and asset-backed securities.

Foreign exchange contracts are transacted with various financial institutions with high credit standing. Accounts receivable are typically unsecured and are derived from revenue from

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customers located around the world. We perform ongoing evaluations to determine customer credit and we limit the amount of credit we extend. We generally do not require collateral from our customers.

Fair Value of Financial Instruments

Our financial assets and liabilities that are measured at fair value on a recurring basis include cash equivalents, marketable securities, derivative contracts, and non-marketable securities. Our financial assets measured at fair value on a nonrecurring basis include non-marketable equity securities, which are adjusted to fair value when observable price changes are identified or when the non-marketable equity securities are impaired (referred to as the measurement alternative). Other financial assets and liabilities are carried at cost with fair value disclosed, if required.

Measurements
Fair value is an exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. Fair value is a market-based measurement that is determined based on assumptions that market participants would use in pricing an asset or a liability. Assets and liabilities recorded at fair value are measured and classified in accordance with a three-tier fair value hierarchy based on the observability of the inputs available in the market used to measure fair value:

Level 1 - Observable inputs that reflect quoted prices (unadjusted) for identical assets or liabilities in active markets.

Level 2 - Inputs that are based upon quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, or model-based valuation techniques for which all significant inputs are observable in the market or can be derived from observable market data. Where applicable, these models use future cash flows and discount the future amounts to a present value using market-based observable inputs including interest rate curves, foreign exchange rates, and credit risk.

Level 3 - Unobservable inputs that are supported by little or no market activities.

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The fair value hierarchy requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value.

Cash, Our financial assets and liabilities that are measured at fair value on a recurring basis include cash equivalents, marketable securities, derivative financial instruments, and certain non-marketable debt securities. Our financial assets measured at fair value on a nonrecurring basis include non-marketable equity securities. Other financial assets and liabilities are carried at cost with fair value disclosed, if required.

We measure certain other instruments, including stock-based compensation awards settled in the stock of certain Other Bets, and certain assets and liabilities acquired in a combination, also at fair value on a nonrecurring basis. The determination of fair value involves the use of appropriate valuation methods and relevant inputs into valuation models.

Financial Instruments

Our financial instruments include cash, cash equivalents, marketable and non-marketable securities, derivative financial instruments and accounts receivable.

Credit Risks

We are subject to credit risk from cash equivalents, marketable securities, derivative financial instruments, including foreign exchange contracts, and accounts receivable. We manage our credit risk exposure through timely assessment of our counterparty creditworthiness, credit limits and use of collateral management. Foreign exchange contracts are transacted with various financial institutions with high credit standing. Accounts receivable are typically unsecured and are derived from revenues earned from customers located around the world. We manage our credit risk exposure by performing ongoing evaluations to determine customer credit and we limit the amount of credit we extend. We generally do not require collateral from our customers.

Cash Equivalents and Marketable Securities

We invest all excess cash primarily in government bonds, corporate debt securities, mortgage-backed and asset-backed securities, time deposits, and money market funds.

Marketable Securities

We classify all marketable debt securities that have stated maturities of three months or less from the date of purchase as cash equivalents and those with stated maturities of more than three months as marketable securities on our Consolidated Balance Sheets.

We determine the appropriate classification of our investments in marketable debt securities at the time of purchase and reevaluate such designation at each balance sheet date. We have classified and accounted for our marketable debt securities as available-for-sale. After consideration of our risk versus reward objectives, as well as our liquidity requirements, we may sell these debt securities prior to their stated maturities. As we view these securities as available to support current operations, we classify highly liquid securities with maturities of three months or less as current assets under the caption marketable securities on the Consolidated Balance Sheets. We carry these securities at fair value, and report the unrealized gains and losses, net of taxes, as a component of stockholders' equity, except for the changes in allowance for expected credit losses, which are recorded in other income (expense), net. For certain marketable debt securities we have elected the fair value option, for which changes in fair value are recorded in other income (expense), net. We determine any realized gains or losses on these marketable debt securities on a specific identification method, and we record such gains and losses as a component of other income (expense), net.

Our investments in marketable equity securities are measured at fair value with the related gains and losses, realized and including unrealized, recognized in other income (expense), net. We classify our marketable equity securities subject to long-term lock-up restrictions beyond twelve months as other non-current assets on the Consolidated Balance Sheets.

Non-Marketable Securities

We account for non-marketable equity securities through which we exercise significant influence but do not have control over the investee under the equity method. Marketable equity securities not accounted for under the equity method are primarily accounted for under the measurement alternative. Under the measurement alternative, the value is measured at cost, less any impairment, plus or minus changes resulting from observable price changes in orderly transactions for identical or similar investments of the same issuer or impairment. Adjustments are determined primarily based on a market approach as of the transaction date and are recorded as a component of other income (expense), net.

Non-marketable debt securities are classified as available-for-sale securities.

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Non-marketable securities that do not have stated contractual maturity dates are classified as other non-current assets on the Consolidated Balance Sheets.

Derivative Financial Instruments

See Note 3 for the accounting policy pertaining to derivative financial instruments.

Accounts Receivable

Our payment terms for accounts receivable vary by the type types and location locations of our customer customers and the products or services offered. The term between invoice date and when payment is due is not significant. For certain products or services and customers, we require payment before the products or services are delivered to the customer.

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We maintain an allowance for credit losses for accounts receivable, which is recorded as an offset to accounts receivable, and changes in such are classified as general and administrative expense in the Consolidated Statements of Income. We assess collectibility by reviewing accounts receivable on a collective basis where similar characteristics exist at an individual basis when we identify specific customers with known disputes or collectibility issues. In determining the amount of the allowance for credit losses, we consider historical experience of collectibility based on past due status and make judgments about the creditworthiness of customers based on ongoing credit evaluations. We also consider customer-specific information, current market conditions (such as the effects caused by COVID-19), and reasonable and supportable forecasts of future economic conditions to inform adjustments to historical data. conditions.

For the year ended December 31, 2020, our assessment considered the impact of COVID-19 and estimates of expected credit and collectibility trends. Volatility in market conditions and evolving credit trends are difficult to predict and may cause variability and volatility that may have a material impact on our allowance for credit losses in future periods. The allowance for credit losses on accounts receivable was \$275 million \$789 million and \$789 million \$550 million as of December 31, 2019 December 31, 2020 and 2020, 2021, respectively.

Inventory Other

Inventory consists primarily of finished goods. Our financial instruments also include debt and is stated at the lower of cost and net realizable value. Cost is computed using the first-in, first-out method.

Non-Marketable Investments

We account for non-marketable equity investments through in companies with which we exercise significant influence but do not also have control over commercial arrangements. In these transactions, judgment is required to assess the investee substance of the arrangements, such as the market value of similar transactions or the fair value of the investment in stand-alone transactions, and whether the agreements should be accounted for as separate transactions under the equity method. Our non-marketable equity securities not accounted for under the equity method are primarily accounted for under the measurement alternative. Under the measurement alternative, the carrying value of our non-marketable equity investments is adjusted to fair value for observable transactions for identical or similar investments of the same issuer or impairment. Adjustments are determined primarily based on a market approach as of the transaction date and are recorded as a component of other income (expense), net.

Non-marketable debt investments are classified as available-for-sale securities.

Non-marketable investments that do not have stated contractual maturity dates are classified as non-current assets on the Consolidated Balance Sheets. applicable GAAP.

Impairment of Investments

We periodically review our debt and non-marketable equity investments securities for impairment.

For debt securities in an unrealized loss position, we determine whether a credit loss exists. The credit loss is estimated by considering available information relevant to the collectibility of the security and information about past events, current conditions, and reasonable and supportable forecasts. Any credit loss is recorded as a charge to other income (expense), net, not to exceed the amount of the unrealized loss. Unrealized losses other than the credit loss are recognized in accumulated other comprehensive income ("AOCI") (loss). If we have an intent to sell, or if it is more likely than not that we will be required to sell a debt security in an unrealized loss position before recovery of its amortized cost basis, we write down the security to its fair value and record the corresponding charge as a component of other income (expense), net.

For non-marketable equity securities, including equity method investments, we consider whether impairment indicators exist by evaluating the companies' financial and operating performance and access to capital resources, and the time since the last adjustment to fair value, among others. other indicators. If the assessment indicates that the investment is impaired, we write down the investment to its fair value by recording the corresponding charge as a component of other income (expense), net. Fair We prepare quantitative measurements of the value of our equity investments using a market approach or an income approach.

Inventory

Inventory consists primarily of finished goods and is estimated stated at the lower of cost and net realizable value. Cost is computed using the best information available, which may include cash flow projections or other available market data. first-in, first-out method.

Variable Interest Entities

We determine at the inception of each arrangement whether an entity in which we have made an investment or in which we have other variable interests is considered a variable interest entity ("VIE") (VIE). We consolidate VIEs when we are the primary beneficiary. We are the primary beneficiary of a VIE when we have the power to direct activities that significantly affect the economic performance of the VIE and have the obligation to absorb the majority of their losses or benefits. If we are not the primary beneficiary in a VIE, we do not consolidate the investment or other variable interests in a VIE in accordance with applicable GAAP.

Periodically, we assess whether any changes in our interest or relationship with the entity affect our determination of whether the entity is a VIE and, if so, whether we are the primary beneficiary.

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Property and Equipment

Property and equipment includes the following categories: land and buildings, information technology assets, construction in progress, leasehold improvements, and furniture and fixtures. Land and buildings include land, offices, data centers, and related building improvements. Information technology assets include servers and network equipment. We account for property and equipment at cost less accumulated depreciation. We compute depreciation using the straight-line method over the estimated useful lives of the assets, which we periodically evaluate. We depreciate buildings over periods of seven to 25 years. We depreciate information technology assets generally over periods of three to five years (servers generally, four years for servers and three to five years for network equipment).

We depreciate leasehold improvements over the shorter of the remaining lease term or the estimated useful lives of the assets. Construction in progress is the construction development of property and equipment that have not yet been placed in service for our intended use. Depreciation for equipment, buildings, and leasehold improvements commences once they are ready for our intended use. Land is not depreciated.

Leases

We determine if an arrangement is a lease at inception. Our lease agreements generally contain lease and non-lease components. Payments under our lease arrangements are primarily fixed. Non-lease components primarily include payments for maintenance and utilities. We combine fixed payments for non-lease components with lease payments and amortization for them together as a single lease component which increases the amount of our lease assets and liabilities.

Certain lease agreements contain variable payments, which are expensed as incurred and not included in the lease assets and liabilities. These amounts include payments affected by the Consumer Price Index, payments contingent on wind or solar production for power purchase arrangements, and payments for maintenance and utilities.

Lease assets and liabilities are recognized at the present value of the future lease payments at the lease commencement date. The interest rate used to determine the present value of the future lease payments is our incremental borrowing rate, because the interest rate implicit in our leases is not readily determinable. Our incremental borrowing rate is estimated to approximate the interest rate on a collateralized basis with similar terms and payments, and in economic environments where the leased asset is located. Our lease terms include leasehold improvements and options to extend or terminate the lease when it is reasonably certain that we will exercise that option. We generally use the base, non-cancelable, lease term when determining lease assets and liabilities. Lease assets also include any prepaid lease payments and lease incentives.

Operating lease assets and liabilities are included on our Consolidated Balance Sheet beginning January 1, 2019. Sheet. The current portion of our operating lease liabilities is included in accrued expenses and other current liabilities, and the long term long-term portion is included in operating lease liabilities. Finance lease assets are included in property and equipment. Finance lease liabilities are included in accrued expenses and other current liabilities or long-term debt.

Operating lease expense (excluding variable lease costs) is recognized on a straight-line basis over the lease term.

Long-Lived Assets, Goodwill and Other Acquired Intangible Assets

We review property and equipment long-term prepayments and intangible assets, excluding goodwill, for impairment when events or changes in circumstances indicate the carrying amount may not be recoverable. The evaluation is performed at the lowest level of identifiable cash flows independent of other assets. We measure recoverability of these assets by comparing the carrying amounts to the future undiscounted cash flows that the assets or the asset group are expected to generate. If the carrying value of the assets or asset group is not recoverable, the impairment recognized is measured as the amount by which the carrying value exceeds its fair value. Impairments were not material for the periods presented.

We allocate goodwill to reporting units based on the expected benefit from the business combination. We evaluate our reporting units periodically, as well as when changes in operating segments occur. For changes in reporting units, we reassign goodwill using a relative fair value allocation approach. We test our goodwill for impairment at least annually, and more frequently if events or changes in circumstances indicate that the asset may be impaired. Goodwill impairments were not material for the periods presented.

Intangible assets with definite lives are amortized over their estimated useful lives. We amortize intangible assets lives on a straight-line basis with definite lives generally over periods ranging from one to twelve years.

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Income Taxes

We account for income taxes using the asset and liability method, under which we recognize the amount of taxes payable or refundable for the current year and deferred tax assets and liabilities for the future tax consequences of events that have been recognized in our financial statements or tax returns. We measure current and deferred tax assets and liabilities based on provisions of enacted tax law. We evaluate the realization of our deferred tax assets based on all available evidence and establish a valuation allowance to reduce deferred tax assets when it is more likely than not that they will not be realized.

We recognize the financial statement effects of a tax position when it is more likely than not that, based on technical merits, the position will be sustained upon examination. Benefits of the position recognized in the financial statements are then measured based on the largest amount of benefit that is greater than 50% likely to be realized upon settlement with a taxing authority. In addition, we recognize interest and penalties related to unrecognized tax benefits as a component of the income tax provision.

Business Combinations

We include the results of operations of the businesses that we acquire as of the acquisition date. We allocate the purchase price of the acquisitions to the assets acquired and assumed based on their estimated fair values. The excess of the purchase price over the fair values of identifiable assets and liabilities is recorded as goodwill. Acquisition-related expenses are recognized separately from the business combination and are expensed as incurred.

Foreign Currency

Generally, the functional currency of our international subsidiaries is the local currency. We translate the financial statements of these **our international** subsidiaries to U.S. dollars using month-end exchange rates for assets and liabilities, and average rates for the annual period derived from month-end exchange rates for revenues, costs, and expenses. We recognize translation gains and losses in accumulated other comprehensive income (AOCI) **AOCI** as a component of stockholders' equity. We reflect net foreign exchange transaction gains and losses resulting from the conversion of the transaction currency to functional currency as a component of foreign currency exchange gain (loss) in other income (expense), net.

Recently Adopted Accounting Pronouncements

In June 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update No. 2016-13 ("ASU 2016-13") "Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments", which requires the measurement and recognition of expected credit losses for financial assets held at amortized cost. ASU 2016-13 replaces the existing incurred loss impairment model with an expected loss model which requires the use of forward-looking information to calculate credit loss estimates. It also eliminates the concept of other-than-temporary impairment and requires credit losses related to certain available-for-sale debt securities to be recorded through an allowance for credit losses rather than as a reduction in the amortized cost basis of the securities. These changes result in earlier recognition of credit losses. We adopted ASU 2016-13 using the modified retrospective approach as of January 1, 2020. The cumulative effect upon adoption was not material to our consolidated financial statements. See "Impairment of Investments" and "Financial Instruments-Debt" above as well as Note 3 for the effect on our consolidated financial statements.

Prior Period Reclassifications

Certain amounts in prior periods have been reclassified to conform with current period presentation. See

Note 15 for further details. 2. Revenues

Revenue Recognition

The following table presents revenues disaggregated by type (in millions):

	Year Ended December 31,		
	2019	2020	2021
Google Search & other	\$ 98,115	\$ 104,062	\$ 110,610
YouTube ads	15,149	19,772	21,155
Google Network	21,547	23,090	21,547
Google advertising	134,811	146,924	152,212
Google other	17,014	21,711	21,711
Google Services total	151,825	168,635	175,480
Google Cloud	8,918	13,059	13,059
Other Bets	659	657	657
Hedging gains (losses)	455	176	176
Total revenues	\$ 161,857	\$ 182,527	\$ 190,472

No individual customer or groups of affiliated customers represented more than 10% of our revenues in 2019, 2020, or 2021.

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Note 2. Revenues

Revenue Recognition

The following table presents our revenues disaggregated by type (in millions).

	Year Ended December 31,		
	2018	2019	2020
Google Search & other	\$ 85,296	\$ 98,115	\$ 110,610
YouTube ads	11,155	15,149	21,155
Google Network Members' properties	20,010	21,547	21,547
Google advertising	116,461	134,811	152,212

Google other		14,063	17,014	
Google Services total		130,524	151,825	
Google Cloud		5,838	8,918	
Other Bets		595	659	
Hedging gains (losses)		(138)	455	
Total revenues		\$ 136,819	\$ 161,857	\$

The following table presents our revenues disaggregated by geography, based on the addresses of our customers (in millions):

		Year Ended December 31,								Year Ended December 31,					
		2018		2019		2020				2019		2020		2021	
United States	United States	\$ 63,269	46 %	\$ 74,843	46 %	\$ 85,014	47 %	United States	\$ 74,843	46 %	\$ 85,014	47 %	\$ 117,854		
EMEA ⁽¹⁾	EMEA ⁽¹⁾	44,739	33	50,645	31	55,370	30	EMEA ⁽¹⁾	50,645	31	55,370	30	79,107		
APAC ⁽¹⁾	APAC ⁽¹⁾	21,341	15	26,928	17	32,550	18	APAC ⁽¹⁾	26,928	17	32,550	18	46,123		
Other Americas ⁽¹⁾	Other Americas ⁽¹⁾	7,608	6	8,986	6	9,417	5	Other Americas ⁽¹⁾	8,986	6	9,417	5	14,404		
Hedging gains (losses)	Hedging gains (losses)	(138)	0	455	0	176	0	Hedging gains (losses)	455	0	176	0	149		
Total revenues	Total revenues	\$ 136,819	100 %	\$ 161,857	100 %	\$ 182,527	100 %	Total revenues	\$ 161,857	100 %	\$ 182,527	100 %	\$ 257,637		

⁽¹⁾ Regions represent Europe, the Middle East, and Africa ("EMEA") (EMEA); Asia-Pacific ("APAC") (APAC); and Canada and Latin America ("Other Americas").

Revenue Backlog and Deferred Revenues

As of December 31, 2021 we had \$51.0 billion of remaining performance obligations ("revenue backlog"), primarily related to Google Cloud, and expect to recognize approximately this amount as revenues over the next 24 months with the remaining thereafter. Our revenue backlog represents commitments in customer contracts for future services that have not yet been recognized as revenues. The amount and Remaining Performance Obligations timing of revenue recognition for these commitments is largely driven by when our customers utilize the services and our ability to deliver in accordance with relevant contract terms, which could affect our estimate of revenue backlog and when we expect to recognize such as revenues. Revenue backlog includes related deferred revenue currently recorded as well as amounts that will be invoiced in future periods, and excludes contracts with an original expected term of one year or less and cancellable contracts.

We record deferred revenues when cash payments are received or due in advance of our performance, including amounts which are refundable. Deferred revenues primarily related to Google Cloud and Google other. Our total Total deferred revenue as of December 31, 2019 December 31, 2020 was \$2.3 billion \$3.0 billion, of which \$1.8 billion \$2.3 billion was recognized as revenues for the year ending December 31, 2020 December 31, 2021.

Additionally, we have performance obligations associated with commitments in customer contracts, primarily related to Google Cloud, for future services that have not yet been recognized as revenues, also referred to as remaining performance obligations. Remaining performance obligations include related deferred revenue currently recorded as well as amounts that will be invoiced in future periods, and excludes (i) contracts with an original expected term of one year or less, (ii) cancellable contracts, and (iii) contracts for which we recognize revenue at the amount to which we have the right to invoice for services performed. As of December 31, 2020, the amount not yet recognized as revenues from these commitments was \$1.8 billion. We expect to recognize approximately half over the next 24 months with the remaining thereafter. However, the amount and timing of revenue recognition is largely driven by when the customer utilizes the services and our ability to deliver in accordance with relevant contract terms, which could impact our estimate of the remaining performance obligations and when we expect to recognize such as revenues.

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Note 3. Financial Instruments

Debt Securities

We classify our marketable debt securities, which are accounted for as available-for-sale within Level 2 in the fair value hierarchy, because we use quoted market prices to the extent available or alternative pricing sources and models utilizing market observable inputs to determine fair value.

For certain marketable debt securities, we have elected the fair value option for which changes in fair value are recorded in other income (expense), net. The fair value option was elected for these securities to align with the unrealized gains and losses from related derivative contracts. Unrealized net gains (losses) related to debt securities still held where we elected the fair value option were \$87 \$87 million and \$(35) million as of December 31, 2020. and December 31, 2021, respectively. As of December 31, 2020 and December 31, 2021 the fair value of these debt securities was \$2 billion. Balances as of December 31, 2019 were not material. \$2.0 billion and \$4.7 billion, respectively.

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The following tables summarize our debt securities, for which we did not elect the fair value option, by significant investment categories as of **December 31, 2019** and **December 31, 2020** (in millions):

		As of December 31, 2019								As of December 31, 2020					
		Adjusted	Gross	Gross	Fair	Cash and			Adjusted	Gross	Gross	Fair	Cash and		
		Cost	Unrealized	Unrealized	Value	Cash	Marketable		Cost	Unrealized	Unrealized	Value	Cash	Ma	
			Gains	Losses		Equivalents	Securities				Losses		Equivalents	Se	
Level 2:	Level 2:							Level 2:							
Time	Time							Time							
deposits ⁽¹⁾	deposits ⁽¹⁾	\$ 2,294	\$ 0	\$ 0	\$ 2,294	\$ 2,294	\$ 0	deposits ⁽¹⁾	\$ 3,564	\$ 0	\$ 0	\$ 3,564	\$ 3,564	\$	
Government	Government	55,033	434	(30)	55,437	4,518	50,919	Government	55,156	793	(9)	55,940	2,527		
bonds	bonds							bonds							
Corporate	Corporate	27,164	337	(3)	27,498	44	27,454	Corporate	31,521	704	(2)	32,223	8		
debt	debt							debt							
securities	securities							securities							
Mortgage-	Mortgage-							Mortgage-							
backed and	backed and							backed and							
asset-backed	asset-backed							asset-backed							
securities	securities	19,453	96	(41)	19,508	0	19,508	securities	16,767	364	(7)	17,124	0		
Total	Total	\$ 103,944	\$ 867	\$ (74)	\$ 104,737	\$ 6,856	\$ 97,881	Total	\$ 107,008	\$ 1,861	\$ (18)	\$ 108,851	\$ 6,099	\$	

		As of December 31, 2020								As of December 31, 2021					
		Adjusted	Gross	Gross	Fair	Cash and			Adjusted	Gross	Gross	Fair	Cash and		
		Cost	Unrealized	Unrealized	Value	Cash	Marketable		Cost	Unrealized	Unrealized	Value	Cash	Ma	
			Gains	Losses		Equivalents	Securities				Losses		Equivalents	Se	
Level 2:	Level 2:							Level 2:							
Time	Time							Time							
deposits ⁽¹⁾	deposits ⁽¹⁾	\$ 3,564	\$ 0	\$ 0	\$ 3,564	\$ 3,564	\$ 0	deposits ⁽¹⁾	\$ 5,133	\$ 0	\$ 0	\$ 5,133	\$ 5,133	\$	
Government	Government	55,156	793	(9)	55,940	2,527	53,413	Government	53,288	258	(238)	53,308	5		
bonds	bonds							bonds							
Corporate	Corporate	31,521	704	(2)	32,223	8	32,215	Corporate	35,605	194	(223)	35,576	12		
debt	debt							debt							
securities	securities							securities							
Mortgage-	Mortgage-							Mortgage-							
backed and	backed and							backed and							
asset-backed	asset-backed							asset-backed							
securities	securities	16,767	364	(7)	17,124	0	17,124	securities	18,829	96	(112)	18,813	0		
Total	Total	\$ 107,008	\$ 1,861	\$ (18)	\$ 108,851	\$ 6,099	\$ 102,752	Total	\$ 112,855	\$ 548	\$ (573)	\$ 112,830	\$ 5,150	\$	

⁽¹⁾ The majority of our time deposits are domestic deposits.

We determine realized gains or losses on the sale or extinguishment of debt securities on a specific identification method. We recognized gross realized gains of **\$1.3 billion**, **\$292 million**, **\$899 million**, and **\$899 million** for the years ended **December 31, 2018**, **December 31, 2019**, **2020**, and **2020, 2021**, respectively. We recognized realized losses of **\$143 million**, **\$143 million**, **\$184 million**, and **\$184 million** for the years ended **December 31, 2018**, **December 31, 2019**, **2020**, and **2020, 2021**, respectively. We reflect these gains and losses as a component of other income (expense), net.

The following table summarizes the estimated fair value of our investments in marketable debt securities by stated contractual maturity dates (in millions):

	As of December 31, 2021
Due in 1 year or less	\$ 19,795
Due in 1 year through 5 years	69,221
Due in 5 years through 10 years	2,700
Due after 10 years	13,034
Total	\$ 104,800

The following tables present fair values and gross unrealized losses recorded to AOCI as of December 31, 2019, December 31, 2020 and 2020, 2021, aggregated by investment type and the length of time that individual securities have been in a continuous loss position (in millions):

		As of December 31, 2019								As of December 31, 2020					
		Less than 12 Months		12 Months or Greater		Total				Less than 12 Months		12 Months or Greater		Total	
		Unrealized		Unrealized		Unrealized				Unrealized		Unrealized		Un	
		Fair Value	Loss	Fair Value	Loss	Fair Value	Loss			Fair Value	Loss	Fair Value	Loss	Fair Value	Loss
Government bonds	Government bonds	\$ 6,752	\$ (20)	\$ 4,590	\$ (10)	\$ 11,342	\$ (30)	Government bonds	\$ 5,516	\$ (9)	\$ 3	\$ 0	\$ 5,519	\$	
Corporate debt securities	Corporate debt securities	1,665	(2)	978	(1)	2,643	(3)	Corporate debt securities	1,999	(1)	0	0	1,999		
Mortgage-backed and asset-backed securities	Mortgage-backed and asset-backed securities	4,536	(13)	2,835	(28)	7,371	(41)	Mortgage-backed and asset-backed securities	929	(5)	242	(2)	1,171		
Total	Total	\$ 12,953	\$ (35)	\$ 8,403	\$ (39)	\$ 21,356	\$ (74)	Total	\$ 8,444	\$ (15)	\$ 245	\$ (2)	\$ 8,689	\$	

		As of December 31, 2020					
		Less than 12 Months		12 Months or Greater		Total	
		Unrealized		Unrealized		Unrealized	
		Fair Value	Loss	Fair Value	Loss	Fair Value	Loss
Government bonds		\$ 5,516	\$ (9)	\$ 3	\$ 0	\$ 5,519	\$
Corporate debt securities		1,999	(1)	0	0	1,999	
Mortgage-backed and asset-backed securities		929	(5)	242	(2)	1,171	
Total		\$ 8,444	\$ (15)	\$ 245	\$ (2)	\$ 8,689	\$

		As of December 31, 2021					
		Less than 12 Months		12 Months or Greater		Total	
		Unrealized		Unrealized		Unrealized	
		Fair Value	Loss	Fair Value	Loss	Fair Value	Loss
Government bonds		\$ 32,843	\$ (236)	\$ 71	\$ (2)	\$ 32,914	\$
Corporate debt securities		22,737	(152)	303	(5)	23,040	
Mortgage-backed and asset-backed securities		11,502	(106)	248	(6)	11,750	
Total		\$ 67,082	\$ (494)	\$ 622	\$ (13)	\$ 67,704	\$

During the years ended December 31, 2018, December 31, 2020 and 2019 we did not recognize any significant other-than-temporary impairment losses. During the year ended December 31, 2020, with the adoption of ASU 2016-13, 2021, we did not recognize significant credit losses and the ending allowance for credit losses was immaterial. See Note 7 for details on other income (expense), net.

Equity Investments

The following discusses our marketable equity securities, non-marketable equity securities, gains and losses on marketable and non-marketable equity securities, as well as our securities accounted for under the equity method.

Our marketable equity securities are publicly traded stocks or funds measured at fair value and classified within Level 1 and 2 in the fair value hierarchy because we use quoted prices for identical assets in active markets or inputs that are based upon quoted prices for similar instruments in active markets.

Our non-marketable equity securities are investments in privately held companies without readily determinable market values. The carrying value of our non-marketable securities is adjusted to fair value for observable transactions for identical or similar investments of the same issuer or impairment (referred to as the measurement alternative). Marketable equity securities that have been remeasured during the period based on observable transactions are classified within Level 2 or Level 3 in the fair value hierarchy because we estimate the value based on valuation methods which may include a combination of the observable transaction price at the transaction date and other unobservable inputs including volatility, rights, and obligations of the securities we hold. The fair value of non-marketable equity securities that have been remeasured due to impairment are classified within Level 3.

Gains and losses on marketable and non-marketable equity securities

Gains and losses reflected in other income (expense), net, for our marketable and non-marketable equity securities are summarized below (in millions):

Year Ended December 31,	
2019	2020

Net gain (loss) on equity securities sold during the period	\$	(301)	\$
Net unrealized gain (loss) on equity securities held as of the end of the period		2,950	
Total gain (loss) recognized in other income (expense), net	\$	2,649	\$

Alpha

	Year Ended December 31,	
	2020	2021
Net gain (loss) on equity securities sold during the period	\$ 1,339	\$
Unrealized gain (loss) on equity securities held as of the end of the period	4,253	
Total gain (loss) recognized in other income (expense), net	\$ 5,592	\$

In the table above, net gain (loss) on equity securities sold during the period reflects the difference between the sale proceeds and the carrying value of the equity security beginning of the period or the purchase date, if later.

Cumulative net gains (losses) on equity securities sold during the period, which is summarized in the following table (in millions), represents the total net gains (losses) recognized from the initial purchase date of the equity security. While these net gains may have been reflected in periods prior to the period of sale, we believe they are important supplemental information as they reflect the economic realized net gains recognized on the securities sold during the period. Cumulative net gains are calculated as the difference between the sale price and the initial purchase price for the equity security sold during the period.

	Equity Securities Sold During the Year Ended December 31,	
	2019	2020
Total sale price	\$ 3,134	\$
Total initial cost	858	
Cumulative net gains (losses)	\$ 2,276	\$

Alpha

	Equity Securities Sold During the Year Ended December 31,	
	2020	2021
Total sale price	\$ 4,767	\$
Total initial cost	2,674	
Cumulative net gains ⁽¹⁾	\$ 2,093	\$

⁽¹⁾ Cumulative net gains excludes cumulative losses of \$738 million resulting from our equity derivatives, which hedged the changes in fair value of certain marketable equity securities sold during the year ended December 31, 2021. The associated derivative liabilities arising from these losses were settled against our holdings of the underlying equity securities.

Carrying value of marketable and non-marketable equity securities

The carrying value is measured as the total initial cost plus the cumulative net gain (loss). The carrying values for our marketable and non-marketable equity securities are summarized below (in millions):

	As of December 31, 2019		
	Marketable Equity Securities	Non-Marketable Equity Securities	Total
Total initial cost	\$ 1,935	\$ 8,297	\$
Cumulative net gain (loss) ⁽¹⁾	1,361	3,056	
Carrying value	\$ 3,296	\$ 11,353	\$

⁽¹⁾ Non-marketable equity securities cumulative net gain (loss) is comprised of \$3.5 billion unrealized gains and \$445 million unrealized losses (including impairment).

	As of December 31, 2020		
	Marketable Equity Securities	Non-Marketable Equity Securities	Total
Total initial cost	\$ 2,227	\$ 14,616	\$

Cumulative net gain (loss) ⁽¹⁾	3,631	4,277	
Carrying value ⁽²⁾	\$ 5,858	\$ 18,893	\$

(1) Non-marketable equity securities cumulative net gain (loss) is comprised of \$6.1 billion unrealized gains and \$1.9 billion unrealized losses (including impairment).

(2) The long-term portion of marketable equity securities (subject to long-term lock-up restrictions) of \$429 million is included in within other non-current assets.

	As of December 31, 2021		
	Marketable Equity Securities	Non-Marketable Equity Securities	Total
Total initial cost	\$ 4,211	\$ 15,135	\$
Cumulative net gain (loss) ⁽¹⁾	3,587	12,436	
Carrying value ⁽²⁾	\$ 7,798	\$ 27,571	\$

- (1) Non-marketable equity securities cumulative net gain (loss) is comprised of \$14.1 billion gains and \$1.7 billion losses (including impairment).
- (2) The long-term portion of marketable equity securities (subject to long-term lock-up restrictions) of \$1.4 billion is included within other non-current assets.

Alpha

Marketable equity securities

The following table summarizes marketable equity securities measured at fair value by significant investment categories as of December 31, 2019 December 31, 2020 and 2020 millions):

		As of December 31, 2019		As of December 31, 2020		As of December 31, 2020		As of December 31, 2020	
		Cash and Cash Equivalents	Marketable Equity Securities	Cash and Cash Equivalents	Marketable Equity Securities	Cash and Cash Equivalents	Marketable Equity Securities	Cash and Cash Equivalents	Marketable Equity Securities
Level 1:	Level 1:					Level 1:			
Money market funds	Money market funds	\$ 4,604	\$ 0	\$ 12,210	\$ 0	Money market funds	\$ 12,210	\$ 0	\$ 7,499
Marketable equity securities ⁽¹⁾⁽²⁾	Marketable equity securities ⁽¹⁾⁽²⁾	0	3,046	0	5,470	Marketable equity securities ⁽¹⁾⁽²⁾	0	5,470	0
		4,604	3,046	12,210	5,470		12,210	5,470	7,499
Level 2:	Level 2:					Level 2:			
Mutual funds	Mutual funds	0	250	0	388	Mutual funds	0	388	0
Total	Total	\$ 4,604	\$ 3,296	\$ 12,210	\$ 5,858	Total	\$ 12,210	\$ 5,858	\$ 7,499

- (1) The balance as of December 31, 2019 December 31, 2020 and 2020 2021 includes investments that were reclassified from non-marketable equity securities following the commencement market trading of the issuers or acquisition by public entities. As of December 31, 2020 certain entities (certain investments are subject to short-term lock-up restrictions. restrictions).
- (2) As of December 31, 2020 and 2021, the long-term portion of marketable equity securities (subject to long-term lock-up restrictions) of \$429 million \$429 million and \$1.4 billion, respectively included within other non-current assets.

Alpha

Non-marketable equity securities

The following is a summary of unrealized gains and losses recorded in other income (expense), net, and which are included as adjustments to the carrying value of non-marketable equity securities held as of the end of the period (in millions):

	Year Ended December 31,	
	2019	2020
Unrealized gains	\$ 2,163	\$
Unrealized losses (including impairment)	(372)	

Total unrealized gain (loss) for non-marketable equity securities	\$	1,791	\$
	Year Ended December 31,		
	2020		2021
Unrealized gains on non-marketable equity securities	\$	3,020	\$
Unrealized losses on non-marketable equity securities (including impairment)		(1,489)	
Total unrealized gain (loss) recognized on non-marketable equity securities	\$	1,531	\$

Equity securities accounted for under the Equity Method

Derivative Financial Instruments

We recognize derivative instruments as either assets or liabilities in the Consolidated Balance Sheets at fair value and classify the derivatives primarily within Level 2 in the fair value hierarchy. We present our collar contracts (an option strategy comprised of a combination of purchased and written options) at net fair values where both the purchased and written options are with the same counterparty. For other derivative contracts, we present at gross fair values. We primarily record changes in the fair value in the Consolidated Statement of Income as either other income (expense), net, or revenues, or in the Consolidated Balance Sheets in AOCI, as discussed below.

collateral pledged related to derivative instruments under our collateral security arrangements are included in other current assets.

Cash Flow Hedges

Cash flow hedge amounts included in the assessment of hedge effectiveness are deferred in AOCI and subsequently reclassified to revenue when the hedged item is recognized in earnings. We exclude the change in forward points and time value from our assessment of hedge effectiveness. The initial value of the excluded component is amortized on a straight-line basis over the life of the hedging instrument and recognized in revenues. The difference between fair value changes of the excluded component and the amount amortized to revenue is recorded in AOCI. If the hedged transactions become probable of not occurring, the corresponding amounts in AOCI are reclassified to other income (expense), net in the period of designation.

Fair Value Hedges

assessment of hedge effectiveness are recognized in other income (expense), net, along with the offsetting gains and losses of the related hedged items. We exclude changes in points from the assessment of hedge effectiveness and recognize changes in the excluded component in other income (expense), net.

Other Derivatives

Other derivatives not designated as hedging instruments consist primarily of foreign currency forward contracts that we use to hedge intercompany transactions and other monetary assets or liabilities denominated in currencies other than the functional currency of a subsidiary. Gains and losses on these contracts, as well as the related costs, are recognized in income (expense), net, along with the foreign currency gains and losses on monetary assets and liabilities.

We also use derivatives not designated as hedging instruments to manage risks relating to interest rates, equity and commodity prices, credit exposures and to enhance investment returns. Additionally, from time to time, we enter into derivatives to hedge the market price risk on certain of our marketable equity securities. Gains (losses) arising from these derivatives are reflected within the "other" component of other income (expense), net and the offsetting recognized gains (losses) on the marketable equity securities are reflected within the (loss) on equity securities, net component of other income (expense), net. See Note 7 for further details on other income (expense), net.

The gross notional amounts of our outstanding derivative instruments were as follows (in millions):

		As of December 31, 2019	As of December 31, 2020	As of December 31, 2020
Derivatives Designated as Hedging Instruments:	Derivatives Designated as Hedging Instruments:			Derivatives Designated as Hedging Instruments:
Foreign exchange contracts	Foreign exchange contracts			Foreign exchange contracts
Cash flow hedges	Cash flow hedges	\$ 13,207	\$ 10,187	Cash flow hedges \$ 10,187
Fair value hedges	Fair value hedges	\$ 455	\$ 1,569	Fair value hedges \$ 1,569
Net investment hedges	Net investment hedges	\$ 9,318	\$ 9,965	Net investment hedges \$ 9,965
Derivatives Not Designated as Hedging Instruments:	Derivatives Not Designated as Hedging Instruments:			Derivatives Not Designated as Hedging Instruments:
Foreign exchange contracts	Foreign exchange contracts	\$ 43,497	\$ 39,861	Foreign exchange contracts \$ 39,861
Other contracts	Other contracts	\$ 117	\$ 2,399	Other contracts \$ 2,399

Alpha

The fair values of our outstanding derivative instruments were as follows (in millions):

		As of December 31, 2019							As of December 31, 2020		
		Fair Value of Derivatives Designated as	Fair Value of Derivatives Not Designated as	Total Fair			Fair Value of Derivatives Designated as	Fair Value of Derivatives Not Designated as			
Derivative Assets:	Derivative Assets:	Hedging Instruments	Hedging Instruments	Value	Derivative Assets:	Derivative Assets:	Hedging Instruments	Hedging Instruments	Derivative Assets:	Derivative Assets:	
Level 2:	Level 2:				Level 2:	Level 2:			Level 2:	Level 2:	
Foreign exchange contracts	Foreign exchange contracts	\$ 91	\$ 253	\$ 344	Foreign exchange contracts	Other current and non-current assets	\$ 33	\$ 316	Foreign exchange contracts	Other current and non-current assets	\$ 316
Other contracts	Other contracts	0	1	1	Other contracts	Other current and non-current assets	0	16	Other contracts	Other current and non-current assets	16
Total	Total	\$ 91	\$ 254	\$ 345	Total	Total	\$ 33	\$ 332	Total	Total	\$ 332

Derivative Liabilities:	Derivative Liabilities:				Derivative Liabilities:			
<u>Level 2:</u>	<u>Level 2:</u>				<u>Level 2:</u>			
Foreign exchange contracts	Foreign exchange contracts	Accrued expenses and other liabilities, current and non-current	\$	173	\$	196	\$	369
Other contracts	Other contracts	Accrued expenses and other liabilities, current and non-current		0		13		13
Total	Total		\$	173	\$	209	\$	382

As of December 31, 2020					As of December 31, 2021				
		Fair Value of Derivatives Designated as	Fair Value of Derivatives Not Designated as	Total Fair Value			Fair Value of Derivatives Designated as	Fair Value of Derivatives Not Designated as	Total Fair Value
Derivative Assets:	Derivative Assets:	Hedging Instruments	Hedging Instruments		Derivative Assets:	Derivative Assets:	Hedging Instruments	Hedging Instruments	
<u>Level 2:</u>	<u>Level 2:</u>				<u>Level 2:</u>				
Foreign exchange contracts	Foreign exchange contracts	Other current and non-current assets	\$	33	\$	316	\$	349	
Other contracts	Other contracts	Other current and non-current assets		0		16		16	
Total	Total		\$	33	\$	332	\$	365	
Derivative Liabilities:	Derivative Liabilities:				Derivative Liabilities:	Derivative Liabilities:			
<u>Level 2:</u>	<u>Level 2:</u>				<u>Level 2:</u>				
Foreign exchange contracts	Foreign exchange contracts	Accrued expenses and other liabilities, current and non-current	\$	395	\$	185	\$	580	
Other contracts	Other contracts	Accrued expenses and other liabilities, current and non-current		0		942		942	
Total	Total		\$	395	\$	1,127	\$	1,522	

The gains (losses) on derivatives in cash flow hedging and net investment hedging relationships recognized in other comprehensive income ("OCI") are (OCI) were summarize (in millions):

		Gains (Losses) Recognized in OCI on Derivatives Before Tax Effect					Gains (Losses) Recognized in OCI on Derivatives Before Tax Effect		
		Year Ended December 31,					Year Ended December 31,		
		2018	2019	2020			2019	2020	2021
Derivatives in Cash Flow Hedging Relationship:	Derivatives in Cash Flow Hedging Relationship:				Derivatives in Cash Flow Hedging Relationship:				

Foreign exchange contracts	Foreign exchange contracts				Foreign exchange contracts			
Amount included in the assessment of effectiveness	Amount included in the assessment of effectiveness	\$	332	\$	38	\$	102	\$
Amount excluded from the assessment of effectiveness	Amount excluded from the assessment of effectiveness		26		(14)		(37)	
Derivatives in Net Investment Hedging Relationship:	Derivatives in Net Investment Hedging Relationship:							
Foreign exchange contracts	Foreign exchange contracts							
Amount included in the assessment of effectiveness	Amount included in the assessment of effectiveness		136		131		(851)	
Total	Total	\$	494	\$	155	\$	(786)	\$

The effect of derivative instruments on income was summarized below (in millions):

	Gains (Losses) Recognized in Income					
	Year Ended December 31,					
	2019		2020		2021	
	Revenues	Other income (expense), net	Revenues	Other income (expense), net	Revenues	Other income (expense), net
Total amounts presented in the Consolidated Statements of Income in which the effects of cash flow and fair value hedges are recorded	\$ 161,857	\$ 5,394	\$ 182,527	\$ 6,858	\$ 257,637	\$
Gains (Losses) on Derivatives in Cash Flow Hedging Relationship:						
Foreign exchange contracts						
Amount of gains (losses) reclassified from AOCI to income	\$ 367	\$ 0	\$ 144	\$ 0	\$ 165	\$
Amount excluded from the assessment of effectiveness recognized in earnings based on an amortization approach	88	0	33	0	(16)	
Gains (Losses) on Derivatives in Fair Value Hedging Relationship:						
Foreign exchange contracts						
Hedged items	0	(19)	0	18	0	
Derivatives designated as hedging instruments	0	19	0	(18)	0	
Amount excluded from the assessment of effectiveness	0	25	0	4	0	
Gains (Losses) on Derivatives in Net Investment Hedging Relationship:						
Foreign exchange contracts						
Amount excluded from the assessment of effectiveness	0	243	0	151	0	
Gains (Losses) on Derivatives Not Designated as Hedging Instruments:						
Foreign exchange contracts	0	(413)	0	718	0	
Other Contracts	0	0	0	(906)	0	
Total gains (losses)	\$ 455	\$ (145)	\$ 177	\$ (33)	\$ 149	\$

The effect of derivative instruments on income is summarized below (in millions):

	Gains (Losses) Recognized in Income					
	Year Ended December 31,					
	2018		2019		2020	
	Revenues	Other income (expense), net	Revenues	Other income (expense), net	Revenues	Other (expense), net
Total amounts presented in the Consolidated Statements of Income in which the effects of cash flow and fair value hedges are recorded	\$ 136,819	\$ 7,389	\$ 161,857	\$ 5,394	\$ 182,527	\$
Gains (Losses) on Derivatives in Cash Flow Hedging Relationship:						
Foreign exchange contracts						
Amount of gains (losses) reclassified from AOCI to income	\$ (139)	\$ 0	\$ 367	\$ 0	\$ 144	\$
Amount excluded from the assessment of effectiveness recognized in earnings based on an amortization approach	1	0	88	0	33	
Gains (Losses) on Derivatives in Fair Value Hedging Relationship:						
Foreign exchange contracts						
Hedged items	0	(96)	0	(19)	0	
Derivatives designated as hedging instruments	0	96	0	19	0	
Amount excluded from the assessment of effectiveness	0	37	0	25	0	
Gains (Losses) on Derivatives in Net Investment Hedging Relationship:						
Foreign exchange contracts						
Amount excluded from the assessment of effectiveness	0	78	0	243	0	
Gains (Losses) on Derivatives Not Designated as Hedging Instruments:						
Foreign exchange contracts	0	54	0	(413)	0	
Other Contracts	0	0	0	0	0	
Total gains (losses)	\$ (138)	\$ 169	\$ 455	\$ (145)	\$ 177	\$

Offsetting of Derivatives

The gross amounts of our derivative instruments subject to master netting arrangements with various counterparties, and cash and non-cash collateral received and pledged under such agreements were as follows (in millions):

Offsetting of Assets

As of December 31, 2019								As of December 31, 2020							
Gross Amounts Not Offset in the Consolidated Balance Sheets, but Have Legal Rights to Offset								Gross Amounts Not Offset in the Consolidated Balance Sheets, but Have Legal Rights to Offset							
Gross								Gross							
Amounts of	Offset in the	in the		Cash	Non-Cash	Net		Amounts of	Offset in the	in the		Cash	Non-Cash	Net	
Recognized	Consolidated	Consolidated	Financial	Collateral	Collateral	Assets		Recognized	Consolidated	Consolidated	Financial	Collateral	Collateral	Assets	
Assets	Balance Sheets	Balance Sheets	Instruments	Received	Received	Exposed		Assets	Balance Sheets	Balance Sheets	Instruments	Received	Received	Exposed	
Derivatives	\$ 366	\$ (21)	\$ 345	\$ (88) ⁽¹⁾	\$ (234)	\$ 0	\$ 23	Derivatives	\$ 397	\$ (32)	\$ 365	\$ (295) ⁽¹⁾	\$ (16)	\$ 0	
As of December 31, 2020								As of December 31, 2021							
Gross Amounts Not Offset in the Consolidated Balance Sheets, but Have Legal Rights to Offset								Gross Amounts Not Offset in the Consolidated Balance Sheets, but Have Legal Rights to Offset							

Gross Amounts Not Offset in the Consolidated Balance Sheets, but Have Legal Rights to Offset							Gross Amounts Not Offset in the Consolidated Balance Sheets, but Have Legal Rights to Offset						

⁽¹⁾ The balances as of December 31, 2019, December 31, 2020 and 2020 2021 were related to derivative liabilities which are allowed to be net settled against derivative assets in accordance master netting agreements.

Offsetting of Liabilities

As of December 31, 2019								As of December 31, 2020							
Gross Amounts Not Offset in the Consolidated Balance Sheets, but Have Legal Rights to Offset								Gross Amounts Not Offset in the Consolidated Balance Sheets, but Have Legal Rights to Offset							

⁽²⁾ The balances as of December 31, 2019, December 31, 2020 and 2020 2021 were related to derivative assets which are allowed to be net settled against derivative liabilities in accordance master netting agreements.

Note 4. Leases

We have entered into operating and finance lease agreements primarily for data centers, land and offices throughout the world with lease periods expiring between 2021 2063.

Components of operating lease expense were as follows (in millions):

Year Ended December 31,				Year Ended December 31,			
		2019	2020			2020	2021
Operating lease cost	Operating lease cost	\$ 1,820	\$ 2,267	Operating lease cost	\$ 2,267	\$ 2,69	
Variable lease cost	Variable lease cost	541	619	Variable lease cost	619	72	
Total operating lease cost	Total operating lease cost	\$ 2,361	\$ 2,886	Total operating lease cost	\$ 2,886	\$ 3,42	

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Supplemental information related to operating leases is was as follows (in millions):

Year Ended December 31,				Year Ended December 31,			
		2019	2020			2020	2021
Cash payments for operating leases	Cash payments for operating leases	\$ 1,661	\$ 2,004	Cash payments for operating leases	\$ 2,004	\$ 2,485	

New operating lease assets obtained in exchange for operating lease liabilities	New operating lease assets obtained in exchange for operating lease liabilities			New operating lease assets obtained in exchange for operating lease liabilities			
		\$	4,391	\$	2,765	\$	2,951

As of **December 31, 2020** **December 31, 2021**, our operating leases had a weighted average remaining lease term of **9.8** years and a weighted average discount rate of **2.6%** **2.3%** lease payments under operating leases as of **December 31, 2020** **December 31, 2021** were as follows (in millions):

2021		\$	2,198				
2022	2022		2,170	2022	\$	2,539	
2023	2023		1,995	2023		2,527	
2024	2024		1,738	2024		2,226	
2025	2025		1,389	2025		1,815	
2026							2026 1,401
Thereafter	Thereafter		5,601	Thereafter		4,948	
Total future lease payments	Total future lease payments		15,091	Total future lease payments		15,456	
Less imputed interest	Less imputed interest		(2,251)	Less imputed interest		(1,878)	
Total lease liability balance	Total lease liability balance	\$	12,840	Total lease liability balance	\$	13,578	

As of **December 31, 2020** **December 31, 2021**, we have entered into leases that have not yet commenced with short-term and long-term future lease payments of \$8.0 billion and \$5.2 billion, excluding purchase options, that are not yet recorded on our Consolidated Balance Sheets. These leases will commence between **2021** **2022** and 2026 with cancelable lease terms of 1 to 25 years.

Note 5. Variable Interest Entities

Consolidated VIEs

We consolidate VIEs in which we hold a variable interest and are the primary beneficiary. The results of operations and financial position of these VIEs are included in our consolidated financial statements.

For certain consolidated VIEs, their assets are not available to us and their creditors do not have recourse to us. As of **December 31, 2019** **December 31, 2020** and **2020, 2021**, assets that can only be used to settle obligations of these VIEs were **\$3.1 billion** **\$5.7 billion** and **\$5.7 billion** **\$6.0 billion**, respectively, and the liabilities for which creditors only have recourse to us were **\$1.2 billion** **\$2.3 billion** and **\$2.3 billion** **\$2.5 billion**, respectively.

Total noncontrolling interests ("NCI") (NCI), including redeemable noncontrolling interests ("RNCI") (RNCI), in our consolidated subsidiaries increased from \$1.2 billion to \$3.9 billion **\$3.9 billion** and **\$4.3 billion** **as of** from December 31, 2019 to December 31, 2020, and **2021**, primarily due to external investments in Waymo, respectively. NCI and RNCI are included in additional paid-in capital. Net loss attributable to noncontrolling interests was not material for any period presented and is included within the "other" component of other (expense), net. See Note 7 for further details on other income (expense), net.

Waymo

In June 2021, Waymo, is an autonomous driving a self-driving technology development company with and a mission to make it safe and easy for people and things to get where they are going. In the first half of 2020, Waymo consolidated VIE, completed an externally led investment round raising in total \$3.2 of \$2.5 billion, the majority of which includes repeat investment from Alphabet. No gain or loss was recognized. The investments related to from external parties were accounted for as equity transactions and resulted in recognition of noncontrolling interests.

Unconsolidated VIEs

We have investments in some VIEs in which we are not the primary beneficiary. These VIEs include private companies that are primarily early stage companies and certain renewable energy entities in which activities involve power generation using renewable sources.

We have determined that the governance structures of these entities do not allow us to direct the activities that would significantly affect their economic performance. Therefore, we are not the primary beneficiary, and the results of operations and financial position of these VIEs are not included in our consolidated financial statements. We account for these investments as non-marketable equity investments securities or equity method investments.

The maximum exposure of these unconsolidated VIEs are is generally based on the current carrying value of the investments and any future funding commitments. We have determined that the single source of our exposure to these

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VIEs are our capital investments in them. The carrying value, and maximum exposure of these unconsolidated VIEs were not material \$1.7 billion and \$1.9 billion, respectively, as of December 31, 2019, December 31, 2020 and December 31, 2021. \$2.7 billion and \$2.9 billion, respectively, as of December 31, 2021.

Note 6. Debt

Short-Term Debt

We have a debt financing program of up to \$5.0 billion \$10.0 billion through the issuance of commercial paper, which increased from \$5.0 billion in September 2019. Proceeds from this program are used for general corporate purposes. We had no commercial paper outstanding as of December 31, 2019, December 31, 2020 and December 31, 2021.

Our short-term debt balance also includes the current portion of certain long-term debt.

Long-Term Debt

In August 2020, Alphabet issued \$10.0 billion of fixed-rate senior unsecured notes in six tranches (collectively, "2020 Notes"): \$1.0 billion due in 2025, \$1.0 billion due in 2027, \$2.0 billion due in 2030, \$1.25 billion due in 2040, \$2.5 billion due in 2050 and \$2.0 billion due in 2060. The 2020 Notes had a weighted average duration of 21.5 years and weighted average coupon of 1.57%. Of the total issuance, \$5.75 billion was designated as Sustainability Bonds, the net proceeds of which are used to fund environmentally and socially responsible projects in the following eight areas: energy efficiency, clean energy, green buildings, clean transportation, circular economy and design, affordable housing, commitment to racial equity, and support for small businesses and COVID-19 crisis response. The remaining net proceeds are used for general corporate purposes.

The total Total outstanding debt is summarized below (in millions, except percentages):

Debt	Debt	Maturity	Coupon Rate	Effective Interest Rate	As of December 31, 2019	As of December 31, 2020	As of December 31, 2021				
							Debt	Maturity	Coupon Rate	Effective Interest Rate	
2011-2016 Notes Issuances		2021 - 2026	2.00% - 3.63%	2.23% - 3.73%	\$ 4,000	\$ 4,000					
2020 Notes Issuance		2025 - 2060	0.45% - 2.25%	0.57% - 2.33%	0	10,000					
2011-2020 Notes Issuances							2011-2020 Notes Issuances	2024 - 2060	0.45% - 3.38%	0.57% - 3.38%	\$14,000
Future finance lease payments, net ⁽¹⁾	Future finance lease payments, net ⁽¹⁾				711	1,201	Future finance lease payments, net ⁽¹⁾				1,201
Total debt	Total debt				4,711	15,201	Total debt				15,201
Unamortized discount and debt issuance costs	Unamortized discount and debt issuance costs				(42)	(169)	Unamortized discount and debt issuance costs				(169)
Less: Current portion of Notes ⁽²⁾	Less: Current portion of Notes ⁽²⁾				0	(999)	Less: Current portion of Notes ⁽²⁾				(999)
Less: Current portion of future finance lease payments, net ⁽¹⁾⁽²⁾	Less: Current portion of future finance lease payments, net ⁽¹⁾⁽²⁾				(115)	(101)	Less: Current portion of future finance lease payments, net ⁽¹⁾⁽²⁾				(101)
Total long-term debt	Total long-term debt				\$ 4,554	\$ 13,932	Total long-term debt				\$13,932

⁽¹⁾ Net of imputed interest.

⁽²⁾ Total current portion of long-term debt is included within other accrued expenses and current liabilities. See Note 7.

The notes in the table above are comprised of fixed-rate senior unsecured obligations and generally rank equally with each other. We may redeem the notes at any time in whole or in part at specified redemption prices. The effective interest rates are based on proceeds received with interest payable semi-annually.

The total estimated fair value of the outstanding notes, including the current portion, was approximately \$4.1 billion \$14.0 billion and \$14.0 billion \$12.4 billion as of December 31, 2019, December 31, 2020 and December 31, 2021, respectively. The fair value was determined based on observable market prices of identical instruments in the markets and is categorized accordingly as Level 2 in the fair value hierarchy.

As of **December 31, 2020** **December 31, 2021**, the aggregate future principal payments for long-term debt, including finance lease liabilities, for each of the next five years and thereafter are as follows (in millions):

2021		\$	1,104		
2022	2022			86	2022
2023	2023			86	2023
2024	2024			1,087	2024
2025	2025			1,088	2025
2026					2026
Thereafter	Thereafter		11,868	Thereafter	
Total	Total	\$	15,319	Total	\$
					15,440

Credit Facility

As of **December 31, 2020** **December 31, 2021**, we have **\$4.0 billion** **\$10.0 billion** of revolving credit facilities which expire in July 2023. The interest rate for the credit facilities is determined based on a formula using certain market rates. **facilities**. No amounts were outstanding under the credit facilities as of **December 31, 2019** **December 31, 2020** and **2020**, **2021**.

In April 2021, we terminated the existing \$4.0 billion revolving credit facilities, which were scheduled to expire in July 2023, and entered into two new revolving credit facilities with amounts of \$4.0 billion and \$6.0 billion, which will expire in April 2022 and April 2026, respectively. The interest rates for the new credit facilities are determined based on a formula using certain market rates, as well as our progress toward the achievement of certain sustainability goals. No amounts have been borrowed under the new credit facilities.

Note 7. Supplemental Financial Statement Information

Property and Equipment, Net

Property and equipment, net, consisted of the following (in millions):

		As of December 31, 2019	As of December 31, 2020		As of Dec 31 2020
Land and buildings	Land and buildings	\$ 39,865	\$ 49,732	Land and buildings	\$49,732
Information technology assets	Information technology assets	36,840	45,906	Information technology assets	45,906
Construction in progress	Construction in progress	21,036	23,111	Construction in progress	23,111
Leasehold improvements	Leasehold improvements	6,310	7,516	Leasehold improvements	7,516
Furniture and fixtures	Furniture and fixtures	156	197	Furniture and fixtures	197
Property and equipment, gross	Property and equipment, gross	104,207	126,462	Property and equipment, gross	126,462
Less: accumulated depreciation	Less: accumulated depreciation	(30,561)	(41,713)	Less: accumulated depreciation	(41,713)
Property and equipment, net	Property and equipment, net	\$ 73,646	\$ 84,749	Property and equipment, net	\$84,749

Accrued expenses and other current liabilities

Accrued expenses and other current liabilities consisted of the following (in millions):

		As of		As of Dec
		December 31, 2019	December 31, 2020	31
				2020
European Commission fines ⁽¹⁾	European Commission fines ⁽¹⁾	\$ 9,405	\$ 10,409	European Commission fines ⁽¹⁾ \$10,409
Payables to brokers for unsettled investment trades				Payables to brokers for unsettled investment trades 754
Accrued customer liabilities	Accrued customer liabilities	2,245	3,118	Accrued customer liabilities 3,118
Accrued purchases of property and equipment	Accrued purchases of property and equipment	2,411	2,197	Accrued purchases of property and equipment 2,197
Current operating lease liabilities	Current operating lease liabilities	1,199	1,694	Current operating lease liabilities 1,694
Other accrued expenses and current liabilities	Other accrued expenses and current liabilities	7,807	11,213	Other accrued expenses and current liabilities 10,459
Accrued expenses and other current liabilities	Accrued expenses and other current liabilities	\$ 23,067	\$ 28,631	Accrued expenses and other current liabilities \$28,631

⁽¹⁾ Includes the effects of foreign exchange and interest. See Note 10 for further details.

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Accumulated Other Comprehensive Income (Loss)

The components Components of AOCI, net of income tax, were as follows (in millions):

	Unrealized Gains				Foreign Currency Translation Adjustments	Unrealized Gains (Losses) on Available- for-Sale Investments	Unrealized Gains (Losses) on Cash Flow Hedges
	Foreign Currency Translation Adjustments	(Losses) on Available-for- Sale Investments	Unrealized Gains (Losses) on Cash Flow Hedges	Total			
Balance as of December 31, 2017	\$ (1,103)	\$ 233	\$ (122)	\$ (992)			
Cumulative effect of accounting change	0	(98)	0	(98)			
Other comprehensive income (loss) before reclassifications	(781)	88	264	(429)			
Amounts excluded from the assessment of hedge effectiveness recorded in AOCI	0	0	26	26			

Amounts reclassified from AOCI		0	(911)	98	(813)						
Other comprehensive income (loss)		(781)	(823)	388	(1,216)						
Balance as of December 31, 2018	Balance as of December 31, 2018	(1,884)	(688)	266	(2,306)	Balance as of December 31, 2018	\$ (1,884)	\$ (688)	\$ 266	\$	
Cumulative effect of accounting change	Cumulative effect of accounting change	0	0	(30)	(30)	Cumulative effect of accounting change	0	0	(30)		
Other comprehensive income (loss) before reclassifications	Other comprehensive income (loss) before reclassifications	(119)	1,611	36	1,528	Other comprehensive income (loss) before reclassifications	(119)	1,611	36		
Amounts excluded from the assessment of hedge effectiveness recorded in AOCI	Amounts excluded from the assessment of hedge effectiveness recorded in AOCI	0	0	(14)	(14)	Amounts excluded from the assessment of hedge effectiveness recorded in AOCI	0	0	(14)		
Amounts reclassified from AOCI	Amounts reclassified from AOCI	0	(111)	(299)	(410)	Amounts reclassified from AOCI	0	(111)	(299)		
Other comprehensive income (loss)	Other comprehensive income (loss)	(119)	1,500	(277)	1,104	Other comprehensive income (loss)	(119)	1,500	(277)		
Balance as of December 31, 2019	Balance as of December 31, 2019	(2,003)	812	(41)	(1,232)	Balance as of December 31, 2019	(2,003)	812	(41)		
Other comprehensive income (loss) before reclassifications	Other comprehensive income (loss) before reclassifications	1,139	1,313	79	2,531	Other comprehensive income (loss) before reclassifications	1,139	1,313	79		
Amounts excluded from the assessment of hedge effectiveness recorded in AOCI	Amounts excluded from the assessment of hedge effectiveness recorded in AOCI	0	0	(37)	(37)	Amounts excluded from the assessment of hedge effectiveness recorded in AOCI	0	0	(37)		
Amounts reclassified from AOCI	Amounts reclassified from AOCI	0	(513)	(116)	(629)	Amounts reclassified from AOCI	0	(513)	(116)		
Other comprehensive income (loss)	Other comprehensive income (loss)	1,139	800	(74)	1,865	Other comprehensive income (loss)	1,139	800	(74)		
Balance as of December 31, 2020	Balance as of December 31, 2020	\$ (864)	\$ 1,612	\$ (115)	\$ 633	Balance as of December 31, 2020	(864)	1,612	(115)		
Other comprehensive income (loss) before reclassifications	Other comprehensive income (loss) before reclassifications					Other comprehensive income (loss) before reclassifications	(1,442)	(1,312)	668		
Amounts excluded from the assessment of hedge effectiveness recorded in AOCI	Amounts excluded from the assessment of hedge effectiveness recorded in AOCI					Amounts excluded from the assessment of hedge effectiveness recorded in AOCI	0	0	48		

Amounts reclassified from AOCI	Amounts reclassified from AOCI	0	(64)	(154)	
Other comprehensive income (loss)	Other comprehensive income (loss)	(1,442)	(1,376)	562	
Balance as of December 31, 2021	Balance as of December 31, 2021	\$ (2,306)	\$ 236	\$ 447	\$

The effects on net income of amounts reclassified from AOCI were as follows (in millions):

			Gains (Losses) Reclassified from AOCI to the Consolidated Statements of Income			Gains (Losses) Reclassified from AOCI to the Consolidated Statements of Income				
			Year Ended December 31,			Year Ended December 31,				
AOCI Components	AOCI Components	Location	2018	2019	2020	AOCI Components	Location	2019	2020	2021
Unrealized gains (losses) on available-for-sale investments	Unrealized gains (losses) on available-for-sale investments	Other income (expense), net	\$ 1,190	\$ 149	\$ 650	Unrealized gains (losses) on available-for-sale investments	Other income (expense), net	\$ 149	\$ 650	\$ 82
		Benefit (provision) for income taxes	(279)	(38)	(137)		Benefit (provision) for income taxes	(38)	(137)	(18)
		Net of tax	911	111	513		Net of income tax	111	513	64
Unrealized gains (losses) on cash flow hedges	Unrealized gains (losses) on cash flow hedges	Revenue	(139)	367	144	Unrealized gains (losses) on cash flow hedges	Revenue	367	144	165
Foreign exchange contracts	Foreign exchange contracts	Other income (expense), net	6	6	6	Foreign exchange contracts	Other income (expense), net	6	6	6
Interest rate contracts	Interest rate contracts	Benefit (provision) for income taxes	35	(74)	(34)	Interest rate contracts	Benefit (provision) for income taxes	(74)	(34)	(17)
		Net of tax	(98)	299	116		Net of income tax	299	116	154
Total amount reclassified, net of tax			\$ 813	\$ 410	\$ 629					
Total amount reclassified, net of income tax						Total amount reclassified, net of income tax		\$ 410	\$ 629	\$

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Other Income (Expense), Net

The components Components of other income (expense), net, were as follows (in millions):

		Year Ended December 31,					Year Ended December 31,		
		2018	2019	2020			2019	2020	2021
Interest income	Interest income	\$ 1,878	\$ 2,427	\$ 1,865	Interest income	\$	2,427	\$ 1,865	\$ 1,865
Interest expense ⁽¹⁾	Interest expense ⁽¹⁾	(114)	(100)	(135)	Interest expense ⁽¹⁾		(100)	(135)	(135)
Foreign currency exchange gain (loss), net ⁽²⁾	Foreign currency exchange gain (loss), net ⁽²⁾	(80)	103	(344)	Foreign currency exchange gain (loss), net ⁽²⁾		103	(344)	(344)
Gain (loss) on debt securities, net ⁽³⁾	Gain (loss) on debt securities, net ⁽³⁾	1,190	149	725	Gain (loss) on debt securities, net ⁽³⁾		149	725	725
Gain (loss) on equity securities, net	Gain (loss) on equity securities, net	5,460	2,649	5,592	Gain (loss) on equity securities, net		2,649	5,592	5,592
Performance fees	Performance fees	(1,203)	(326)	(609)	Performance fees		(326)	(609)	(609)
Income (loss) and impairment from equity method investments, net	Income (loss) and impairment from equity method investments, net	(120)	390	401	Income (loss) and impairment from equity method investments, net		390	401	401
Other ⁽⁴⁾ ⁽³⁾	Other ⁽⁴⁾ ⁽³⁾	378	102	(637)	Other ⁽⁴⁾ ⁽³⁾		102	(637)	(637)
Other income (expense), net	Other income (expense), net	\$ 7,389	\$ 5,394	\$ 6,858	Other income (expense), net	\$	5,394	\$ 6,858	\$ 6,858

(1) Interest expense is net of interest capitalized of \$92 million \$167 million, \$167 million \$218 million, and \$218 million \$163 million for the years ended December 31, 2018 December 31, 2019, 2020, and 2020, 2021, respectively.

(2) Our foreign currency exchange gain (loss), net, is primarily related to the forward points for our foreign currency hedging contracts and foreign exchange transaction gains and losses conversion of the transaction currency to the functional currency, offset by the foreign currency hedging contracts' losses and gains.

(3) During the year ended December 31, 2018, the terms of a non-marketable debt security were modified resulting in an unrealized \$1.3 billion gain.

(4) During the year ended December 31, 2020, we entered into derivatives that hedged the changes in fair value of certain marketable equity securities, which resulted in a \$902 million loss, \$902 million and gains of \$92 million for the years ended December 31, 2020 and 2021, respectively. The offsetting recognized gains and losses on the marketable equity securities are in Gain (loss) on equity securities, net.

Note 8. Acquisitions

2020 Fitbit

In January 2021, we closed the acquisition of Fitbit, a leading wearables brand for \$2.1 billion. The addition of Fitbit to Google Services is expected to help spur innovation in wearables devices. The assets acquired and liabilities assumed were recorded at fair value. The purchase price excludes post acquisition compensation arrangements. The purchase price was attributed to \$440 million cash acquired, \$590 million of intangible assets, \$1.2 billion of goodwill and \$92 million of net liabilities assumed. Goodwill was recorded in the Google segment and primarily attributable to synergies expected to arise after the acquisition. Goodwill is not expected to be deductible for tax purposes.

Other Acquisitions

During the year ended December 31, 2020 December 31, 2021, we completed other acquisitions and purchases of intangible assets for total consideration of approximately \$885 million, net of cash acquired. In aggregate, \$248 million was attributed to acquired, of which the total amount of goodwill expected to intangible assets, \$446 million to intangible assets and \$50 million to net assets acquired. These acquisitions generally enhance the breadth and depth of our offerings and expand our expertise in engineering and other functional areas. The amount of goodwill that is deductible for tax purposes is approximately \$118 million. Pro forma results of operations for these acquisitions have not been presented because they are not material to our consolidated results of operations, either individually or in the aggregate.

For all intangible assets acquired and purchased during the year ended December 31, 2020, patents and developed technology have a weighted-average useful life of 4 years, customer relationships have a weighted-average useful life of 4.7 years, and trade names and other have a weighted-average useful life of 4.6 years.

Acquisition of Fitbit

In January 2021, we closed the acquisition of Fitbit, a leading wearables brand for \$2.1 billion.

Note 9. Goodwill and Other Intangible Assets**Goodwill**

Changes in the carrying amount of goodwill for the years ended **December 31, 2019**, **December 31, 2020** and **2020-2021** were as follows (in millions):

	Google	Google Services	Google Cloud	Other Bets	Total		Google	Google Services	Google Cloud	Other Bets	Total
Balance as of December 31, 2018	\$ 17,521	\$ 0	\$ 0	\$ 367	\$ 17,888						
Acquisitions	2,353	0	0	475	2,828						
Transfers	9	0	0	(9)	0						
Foreign currency translation and other adjustments	38	0	0	(130)	(92)						
Balance as of December 31, 2019	19,921	0	0	703	20,624	Balance as of December 31, 2019	\$ 19,921	\$ 0	\$ 0	\$ 703	\$ 20,624
Acquisitions	204	0	0	0	204	Acquisitions	204	53	189	0	
Foreign currency translation and other adjustments	46	0	0	(4)	42	Foreign currency translation and other adjustments	46	56	5	(2)	
Allocation in the fourth quarter of 2020 ⁽¹⁾	(20,171)	18,408	1,763	0	0	Allocation in the fourth quarter of 2020 ⁽¹⁾	(20,171)	18,408	1,763	0	
Balance as of December 31, 2020	0	53	189	0	242	Balance as of December 31, 2020	0	18,517	1,957	701	
Acquisitions	0	53	189	0	242	Acquisitions	0	1,325	382	103	
Foreign currency translation and other adjustments	0	56	5	2	63	Foreign currency translation and other adjustments	0	(16)	(2)	(11)	
Balance as of December 31, 2020	\$ 0	\$ 18,517	\$ 1,957	\$ 701	\$ 21,175						
Balance as of December 31, 2021						Balance as of December 31, 2021	\$ 0	\$ 19,826	\$ 2,337	\$ 793	\$ 22,956

⁽¹⁾ Represents reallocation of goodwill as a result of our change in segments in the fourth quarter of 2020. See Note 15 for further details details.

Other Intangible Assets

Information regarding purchased intangible assets were **was** as follows (in millions):

		As of December 31, 2019					As of December 31, 2020		
		Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount			Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Patents and developed technology	Patents and developed technology	\$ 4,972	\$ 3,570	\$ 1,402	Patents and developed technology	\$ 4,639	\$ 3,649	\$ 990	\$ 990
Customer relationships	Customer relationships	254	30	224	Customer relationships	266	49	217	217
Trade names and other	Trade names and other	703	350	353	Trade names and other	624	461	163	163
Total		\$ 5,929	\$ 3,950	\$ 1,979					

Total definite-lived intangible assets	Total definite-lived intangible assets	5,529	4,159	1
Indefinite-lived intangible assets	Indefinite-lived intangible assets	75	0	
Total intangible assets	Total intangible assets	\$ 5,604	\$ 4,159	\$ 1

As of December 31, 2020					As of December 31, 2021				
		Gross Carrying Amount	Accumulated Amortization	Net Carrying Value		Gross Carrying Amount	Accumulated Amortization	Net Carrying Value	
Patents and developed technology	Patents and developed technology	\$ 4,639	\$ 3,649	\$ 990	Patents and developed technology	\$ 4,786	\$ 4,112	\$	
Customer relationships	Customer relationships	266	49	217	Customer relationships	506	140		
Trade names and other	Trade names and other	699	461	238	Trade names and other	534	295		
Total		\$ 5,604	\$ 4,159	\$ 1,445					
Total definite-lived intangible assets	Total definite-lived intangible assets				Total definite-lived intangible assets	5,826	4,547	1	
Indefinite-lived intangible assets	Indefinite-lived intangible assets				Indefinite-lived intangible assets	138	0		
Total intangible assets	Total intangible assets				Total intangible assets	\$ 5,964	\$ 4,547	\$ 1	

Patents and developed technology, customer relationships, and trade names and other have weighted-average remaining useful lives of 1.60.7 years, 4.93.5 years, and 2.14 respectively.

For all intangible assets acquired and purchased during the year ended December 31, 2021, patents and developed technology have a weighted-average useful life of 4 customer relationships have a weighted-average useful life of 4.3 years, and trade names and other have a weighted-average useful life of 9.9 years.

Amortization expense relating to purchased intangible assets was \$865 million \$795 million, \$795 million \$774 million, and \$774 million \$875 million for the years ended December 31, 2019, 2020, and 2021, respectively.

As of December 31, 2020					As of December 31, 2021				
2021		\$		719	2021	\$		537	
2022	2022			375	2022			255	
2023	2023			104	2023			226	
2024	2024			78	2024			98	
2025	2025			53	2025			61	
2026					2026				
Thereafter	Thereafter			116	Thereafter			102	
		\$		1,445		\$		1,279	

Note 10. Commitments and Contingencies

Purchase Obligations

As of December 31, 2020, we had \$10.7 billion of other non-cancelable contractual obligations, primarily related to data center operations and build-outs, digital media licensing, information technology assets and purchases of inventory.

Indemnifications

In the normal course of business, including to facilitate transactions in our services and products and corporate activities, we indemnify certain parties, including advertisers Network Members, partners, customers of Google Cloud offerings, lessors and lessors service providers with respect to certain matters. We have agreed to hold certain parties liable against losses arising from a breach of representations or covenants, or out of intellectual property infringement or other claims made against certain parties. Several of these agreements limit the time within which an indemnification claim can be made and the amount of the claim. In addition, we have entered into indemnification agreements with our officers, directors, and our bylaws contain similar indemnification obligations to our agents.

It is not possible to make a reasonable estimate of the maximum potential amount under these indemnification agreements due to the unique facts and circumstances involved in each particular agreement. Additionally, we have a limited history of prior indemnification claims, and the payments we have made under such agreements have not had a material effect on our results of operations, cash flows, or financial position. However, to the extent that valid indemnification claims arise in the future, future payments by us could be significant and could have a material adverse effect on our results of operations or cash flows in a particular period.

As of December 31, 2020 and December 31, 2021, we did not have any material indemnification claims that were probable or reasonably possible.

Legal Matters

Antitrust Investigations

On November 30, 2010, the EC's Directorate General for Competition opened an investigation into various antitrust-related complaints against us.

On June 27, 2017, the EC announced its decision that certain actions taken by Google regarding its display and ranking of shopping search results and ads infringed European competition law. The EC decision imposed a €2.4 billion (\$2.7 billion as of June 27, 2017) fine. On September 11, 2017, we appealed the EC decision to the General Court of the European Union. On September 27, 2017, we implemented product changes to bring shopping ads into compliance with the EC's decision. We recognized a charge of \$2.7 billion for the first quarter of 2017. On November 10, 2021, the General Court rejected our appeal, and we subsequently filed an appeal with the European Court of Justice on January 20, 2022.

On July 18, 2018, the EC announced its decision that certain provisions in Google's Android-related distribution agreements infringed European competition law. The EC decision imposed a €4.3 billion (\$5.1 billion as of June 30, 2018) fine and directed the termination of the conduct at issue. On October 9, 2018, we appealed the EC decision. On October 18, 2018, we implemented changes to certain of our Android distribution practices. We recognized a charge of \$5.1 billion for the fine in the second quarter of 2018.

On March 20, 2019, the EC announced its decision that certain contractual provisions in agreements that Google had with AdSense for Search partners infringed European competition law. The EC decision imposed a fine of €1.5 billion (\$1.7 billion as of March 20, 2019) and directed actions related to AdSense for Search partners' agreements, which we implemented prior to the decision. On June 4, 2019, we appealed the EC decision. We recognized a charge of \$1.7 billion for the fine in the first quarter of 2019.

While each EC decision is under appeal, we included the fines in accrued expenses and other current liabilities on our Consolidated Balance Sheets as we provided bank guarantees in lieu of a cash payment for the fines.

From time to time we are subject to formal and informal inquiries and investigations on competition matters by regulatory authorities in the United States, Europe, and other jurisdictions. For example, in August 2019, we began receiving civil investigative demands from the U.S. Department of Justice ("DOJ") requesting information and documents related to our prior antitrust investigations and certain aspects of our business. The DOJ and a number of state Attorneys General filed a lawsuit on October 20, 2020 alleging that Google violated U.S. antitrust laws relating to Search and Search advertising. Separately, on December 16, 2020, a number of state Attorneys General filed an antitrust complaint against Google in the United States District Court for the Eastern District of Texas, alleging that Google violated U.S. antitrust laws as well as state deceptive trade laws relating to its advertising technology. On June 22, 2021, the EC opened a formal investigation into Google's advertising technology business practices. On July 7, 2021, a number of state Attorneys General filed an antitrust complaint against us in the U.S. District Court for the Northern District of California, alleging that Google's operation of Android and Google Play violated U.S. antitrust laws and antitrust and consumer protection laws. We believe these complaints are without merit and will defend ourselves vigorously. The DOJ and state Attorneys General continue investigations into certain aspects of our business. We continue to cooperate with federal and state regulators in the United States, the EC and other regulators around the world.

Patent and Intellectual Property Claims

We have had patent, copyright, trade secret, and trademark infringement lawsuits filed against us claiming that certain of our products, services, and technologies infringe intellectual property rights. Adverse results in these lawsuits may include awards of substantial monetary damages, costly royalty or licensing agreements, or orders preventing offering certain features, functionalities, products, or services. As a result, we may have to change our business practices and develop non-infringing products or technologies, which may result in a loss of revenues for us and otherwise harm our business. In addition, the U.S. International Trade Commission ("ITC") has increasingly become an important forum for intellectual property disputes because an ultimate loss in an ITC action can result in a prohibition on importing infringing products into the U.S. Because the U.S. is an important market for our products, a prohibition on importation could have an adverse effect on us, including preventing us from importing many important products into the U.S. or necessitating workarounds that reduce the value of certain features of our products.

Furthermore, many of our agreements with our customers and partners require us to indemnify them against certain intellectual property infringement claims, which would increase our costs as a result of defending such claims, and may require that we pay significant damages if there were an adverse ruling in any such claims. In addition, our customers and partners may discontinue the use of our products, services, and technologies, as a result of injunctions or otherwise, which could result in loss of revenues and adversely affect our business.

In 2010, Oracle America, Inc. ("Oracle") (Oracle) brought a copyright lawsuit against Google in the Northern District of California, alleging that Google's Android operating infringes Oracle's copyrights related to certain Java application programming interfaces, interfaces (Java APIs). After trial, final judgment was entered by the district court in favor of on June 8, 2016, and the court decided post-trial motions in favor of Google. Oracle appealed and on March 27, 2018, the appeals court Federal Circuit Court of Appeals rever remanded the case for a trial on damages. On May 29, 2018, we filed a petition for a rehearing at the Federal Circuit, and on August 28, 2018, the Federal Circuit denied the peti January 24, 2019, we filed a petition to the U.S. Supreme Court of the United States to review this the case. On April 29, 2019, the Supreme Court requested the views of the Solicitor regarding our petition. On September 27, 2019, the Solicitor General recommended denying our petition, and we provided our response on October 16, 2019. On November 15, 2 Supreme Court granted our petition and made a decision to review the case. The Supreme Court heard oral arguments in our case on October 7, 2020. If On April 5, 2021, the Suprer does not rule in our favor, reversed the Federal Circuit's ruling and found that Google's use of the Java APIs was a fair use as a matter of law. The Supreme Court remanded the cas remanded to the Federal Circuit for further proceedings in conformity with the Supreme Court opinion. On May 14, 2021, the Federal Circuit entered an order affirming the distric final judgment in favor of Google. On June 21, 2021, the Federal Circuit issued a mandate returning the case to the district court, for further determination of the remaining issues in case including damages, if any. We believe this lawsuit is without merit and are defending ourselves vigorously. Given the nature of this case, we are unable to estimate the rea possible loss or range of loss, if any, arising from this matter. now concluded.

Other

We are also regularly subject to claims, suits, regulatory and government investigations, and other proceedings, and consent decrees involving competition, intellectual p privacy, tax and related compliance, labor and employment, commercial disputes, content generated by our users, goods and services offered by advertisers or publishers u platforms, personal injury, consumer protection, and other matters. For example, we have a number of privacy investigations and suits ongoing in multiple jurisdictions. Such clair regulatory and government investigations, and other proceedings, and consent decrees could result in substantial fines and penalties, injunctive relief, ongoing auditing and mc obligations, changes to our products and services, alterations to our business models and operations, and collateral related civil litigation or other adverse consequences, all of whi harm our business, reputation, financial condition, and operating results.

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Certain of these outstanding matters include speculative, substantial or indeterminate monetary amounts. We record a liability when we believe that it is probable that a loss f incurred, and the amount can be reasonably estimated. If we determine that a loss is reasonably possible and the loss or range of loss can be estimated, we

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disclose the reasonably possible loss. We evaluate developments in our legal matters that could affect the amount of liability that has been previously accrued, and the matters and reasonably possible losses disclosed, and make adjustments as appropriate. Significant judgment is required to determine both the likelihood of there being and the estimated amc loss related to such matters.

With respect to our outstanding matters, based on our current knowledge, we believe that the amount or range of reasonably possible loss will not, either individually or in ag have a material adverse effect on our business, consolidated financial position, results of operations, or cash flows. However, the outcome of such matters is inherently unpredict subject to significant uncertainties.

We expense legal fees in the period in which they are incurred.

Non-Income Taxes

We are under audit by various domestic and foreign tax authorities with regards to non-income tax matters. The subject matter of non-income tax audits primarily aris disputes on the tax treatment and tax rate applied to the sale of our products and services in these jurisdictions and the tax treatment of certain employee benefits. We accrue nor taxes that may result from examinations by, or any negotiated agreements with, these tax authorities when a loss is probable and reasonably estimable. If we determine that reasonably possible and the loss or range of loss can be estimated, we disclose the reasonably possible loss. Due to the inherent complexity and uncertainty of these matters and process in certain jurisdictions, the final outcome may be materially different from our expectations.

For information regarding income tax contingencies, see Note 14.

Note 11. Stockholders' Equity

Convertible Preferred Stock

Our Board of Directors has authorized 100 million shares of convertible preferred stock, \$0.001 par value, issuable in series. As of December 31, 2019 December 31, 2020 and 20 no shares were issued or outstanding.

Class A and Class B Common Stock and Class C Capital Stock

Our Board of Directors has authorized three classes of stock, Class A and Class B common stock, and Class C capital stock. The rights of the holders of each class of our comr capital stock are identical, except with respect to voting. Each share of Class A common stock is entitled to one vote per share. Each share of Class B common stock is entitled to 10 v share. Class C capital stock has no voting rights, except as required by applicable law. Shares of Class B common stock may be converted at any time at the option of the stockho automatically convert upon sale or transfer to Class A common stock.

Share Repurchases

In July 2020, April 2021, the Board of Directors of Alphabet authorized the company to repurchase up to an additional \$28.0 billion \$50.0 billion of its Class C capital st repurchases are being executed from time In July 2021, the Alphabet board approved an amendment to time, subject the April 2021 authorization, permitting the company to business repurchase both Class A and Class C shares in a manner deemed in the best interest of the company and its stockholders, taking into account the economic cost and p

market conditions, including the relative trading prices and other investment opportunities, through open market purchases or privately negotiated transactions, including through 10b5-1 plans. The repurchase program does not have an expiration date. As of December 31, 2021, \$17.4 billion remains available for Class C share repurchases under the amended authorization.

During the years ended December 31, 2019, December 31, 2020 and 2020, 2021, we repurchased 15.3 million, 21.5 million and 21.5 million, 20.3 million aggregate shares for \$31.1 billion and \$50.3 billion, respectively. Of the aggregate amount repurchased during 2021, 1.2 million shares were Class A stock for \$3.4 billion.

Stock Split Effected in Form of Stock Dividend ("Stock Split")

On February 1, 2022, the Company announced that the Board of Directors had approved and declared a 20-for-one stock split in the form of a one-time special stock dividend of the Company's Class A, Class B, and Class C stock. The Stock Split is subject to stockholder approval of an amendment to the Company's Amended and Restated Certificate of Incorporation to increase the number of authorized shares of Alphabet Class A, Class B, and Class C capital stock to accommodate the Stock Split.

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If approval is obtained, each of the Company's stockholders of record at the close of business on July 1, 2022 (the "Record Date"), will receive, after the close of business on July 1, 2022, a dividend of 19 additional shares of the same class of stock for an aggregate amount every share held by such stockholder as of \$18.4 billion and \$31.1 billion, respectively, the Record Date.

Note 12. Net Income Per Share

We compute net income per share of Class A, and Class B, common stock and Class C capital stock using the two-class method. Basic net income per share is computed using the weighted-average number of shares outstanding during the period. Diluted net income per share is computed using the weighted-average number of shares and the effect of potentially dilutive securities outstanding during the period. Potentially dilutive securities consist of restricted stock units and other contingently issuable shares. The dilutive effect of outstanding restricted stock units and other contingently issuable shares is reflected in diluted earnings per share by application of the treasury stock method. The computation of the diluted net income per share of Class A common stock assumes the conversion of Class B common stock, while the diluted net income per share of Class B common stock does not assume conversion of those shares.

The rights, including the liquidation and dividend rights, of the holders of our Class A, and Class B, common stock and Class C capital stock are identical, except with respect to conversion. Furthermore, there are a number of

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safeguards built into our certificate of incorporation, as well as Delaware law, which preclude our Board of Directors from declaring or paying unequal per share dividends on our Class A, and Class B, common stock and Class C capital stock. Specifically, Delaware law provides that amendments to our certificate of incorporation which would have the effect of altering the rights, powers, or preferences of a given class of stock must be approved by the class of stock adversely affected by the proposed amendment. In addition, our certificate of incorporation provides that before any such amendment may be put to a stockholder vote, it must be approved by the unanimous consent of our Board of Directors. As a result, undistributed earnings for each year are allocated based on the contractual participation rights of the Class A, and Class B, common shares and Class C capital stock as if the earnings for that year had been distributed. As the liquidation and dividend rights are identical, the undistributed earnings are allocated on a proportionate basis.

In the years ended December 31, 2018, December 31, 2019, 2019, 2020 and 2020, 2021, the net income per share amounts are the same for Class A, and Class B, common stock and Class C capital stock because the holders of each class are entitled to equal per share dividends or distributions in liquidation in accordance with the Amended and Restated Certificate of Incorporation of Alphabet Inc.

The following tables set forth the computation of basic and diluted net income per share of Class A, and Class B, common stock and Class C capital stock (in millions, except for amounts which are reflected in thousands and per share amounts):

		Year Ended December 31,					Year Ended December 31,		
		2018					2019		
		Class A	Class B	Class C			Class A	Class B	Class C
Basic net income per share:	Basic net income per share:				Basic net income per share:				
Numerator	Numerator				Numerator				
Allocation of undistributed earnings	Allocation of undistributed earnings	\$ 13,200	\$ 2,072	\$ 15,464	Allocation of undistributed earnings	\$ 14,846	\$ 2,307	\$ 17,153	\$ 17,153
Denominator	Denominator				Denominator				
Number of shares used in per share computation	Number of shares used in per share computation	298,548	46,864	349,728	Number of shares used in per share computation	299,402	46,527	346,000	346,000
Basic net income per share	Basic net income per share	\$ 44.22	\$ 44.22	\$ 44.22	Basic net income per share	\$ 49.59	\$ 49.59	\$ 49.59	\$ 49.59

Diluted net income per share:		Diluted net income per share:			Diluted net income per share:		Diluted net income per share:		
Numerator	Numerator				Numerator				
Allocation of undistributed earnings for basic computation	Allocation of undistributed earnings for basic computation	\$ 13,200	\$ 2,072	\$ 15,464	Allocation of undistributed earnings for basic computation	\$ 14,846	\$ 2,307	\$ 17,153	
Reallocation of undistributed earnings as a result of conversion of Class B to Class A shares	Reallocation of undistributed earnings as a result of conversion of Class B to Class A shares	2,072	0	0	Reallocation of undistributed earnings as a result of conversion of Class B to Class A shares	2,307	0	2,307	
Reallocation of undistributed earnings	Reallocation of undistributed earnings	(146)	(24)	146	Reallocation of undistributed earnings	(126)	(20)	(146)	
Allocation of undistributed earnings	Allocation of undistributed earnings	\$ 15,126	\$ 2,048	\$ 15,610	Allocation of undistributed earnings	\$ 17,027	\$ 2,287	\$ 19,314	
Denominator	Denominator				Denominator				
Number of shares used in basic computation	Number of shares used in basic computation	298,548	46,864	349,728	Number of shares used in basic computation	299,402	46,527	345,929	
Weighted-average effect of dilutive securities	Weighted-average effect of dilutive securities				Weighted-average effect of dilutive securities				
Add:	Add:				Add:				
Conversion of Class B to Class A common shares outstanding	Conversion of Class B to Class A common shares outstanding	46,864	0	0	Conversion of Class B to Class A common shares outstanding	46,527	0	46,527	
Conversion of Class B to Class A shares outstanding	Conversion of Class B to Class A shares outstanding				Conversion of Class B to Class A shares outstanding				
Restricted stock units and other contingently issuable shares	Restricted stock units and other contingently issuable shares	689	0	7,456	Restricted stock units and other contingently issuable shares	413	0	413	
Number of shares used in per share computation	Number of shares used in per share computation	346,101	46,864	357,184	Number of shares used in per share computation	346,342	46,527	351,919	
Diluted net income per share	Diluted net income per share	\$ 43.70	\$ 43.70	\$ 43.70	Diluted net income per share	\$ 49.16	\$ 49.16	\$ 49.16	

Denominator	Denominator				Denominator			
Number of shares used in per share computation	Number of shares used in per share computation	299,402	46,527	346,667	Number of shares used in per share computation	299,815	46,182	334,000
Basic net income per share	Basic net income per share	\$ 49.59	\$ 49.59	\$ 49.59	Basic net income per share	\$ 59.15	\$ 59.15	\$ 59.15
Diluted net income per share:	Diluted net income per share:				Diluted net income per share:			
Numerator	Numerator				Numerator			
Allocation of undistributed earnings for basic computation	Allocation of undistributed earnings for basic computation	\$ 14,846	\$ 2,307	\$ 17,190	Allocation of undistributed earnings for basic computation	\$ 17,733	\$ 2,732	\$ 19,465
Reallocation of undistributed earnings as a result of conversion of Class B to Class A shares	Reallocation of undistributed earnings as a result of conversion of Class B to Class A shares	2,307	0	0	Reallocation of undistributed earnings as a result of conversion of Class B to Class A shares	2,732	0	2,732
Reallocation of undistributed earnings	Reallocation of undistributed earnings	(126)	(20)	126	Reallocation of undistributed earnings	(180)	(25)	(205)
Allocation of undistributed earnings	Allocation of undistributed earnings	\$ 17,027	\$ 2,287	\$ 17,316	Allocation of undistributed earnings	\$ 20,285	\$ 2,707	\$ 22,992
Denominator	Denominator				Denominator			
Number of shares used in basic computation	Number of shares used in basic computation	299,402	46,527	346,667	Number of shares used in basic computation	299,815	46,182	334,000
Weighted-average effect of dilutive securities	Weighted-average effect of dilutive securities				Weighted-average effect of dilutive securities			
Add:	Add:				Add:			
Conversion of Class B to Class A common shares outstanding	Conversion of Class B to Class A common shares outstanding	46,527	0	0	Conversion of Class B to Class A common shares outstanding	46,182	0	46,182
Conversion of Class B to Class A shares outstanding	Conversion of Class B to Class A shares outstanding				Conversion of Class B to Class A shares outstanding	46,182	0	46,182
Restricted stock units and other contingently issuable shares	Restricted stock units and other contingently issuable shares	413	0	5,547	Restricted stock units and other contingently issuable shares	87	0	127
Number of shares used in per share computation	Number of shares used in per share computation	346,342	46,527	352,214	Number of shares used in per share computation	346,084	46,182	344,000
Diluted net income per share	Diluted net income per share	\$ 49.16	\$ 49.16	\$ 49.16	Diluted net income per share	\$ 58.61	\$ 58.61	\$ 58.61
Year Ended December 31,					Year Ended December 31,			
2020					2021			
Class A Class B Class C					Class A Class B Class C			
Basic net income per share:	Basic net income per share:				Basic net income per share:			
Numerator	Numerator				Numerator			

Allocation of undistributed earnings	Allocation of undistributed earnings	\$ 17,733	\$ 2,732	\$ 19,804	Allocation of undistributed earnings	\$ 34,200	\$ 5,174	\$ 3
Denominator	Denominator				Denominator			
Number of shares used in per share computation	Number of shares used in per share computation	299,815	46,182	334,819	Number of shares used in per share computation	300,310	45,430	32
Basic net income per share	Basic net income per share	\$ 59.15	\$ 59.15	\$ 59.15	Basic net income per share	\$ 113.88	\$ 113.88	\$ 1
Diluted net income per share:	Diluted net income per share:				Diluted net income per share:			
Numerator	Numerator				Numerator			
Allocation of undistributed earnings for basic computation	Allocation of undistributed earnings for basic computation	\$ 17,733	\$ 2,732	\$ 19,804	Allocation of undistributed earnings for basic computation	\$ 34,200	\$ 5,174	\$ 3
Reallocation of undistributed earnings as a result of conversion of Class B to Class A shares	Reallocation of undistributed earnings as a result of conversion of Class B to Class A shares	2,732	0	0	Reallocation of undistributed earnings as a result of conversion of Class B to Class A shares	5,174	0	
Reallocation of undistributed earnings	Reallocation of undistributed earnings	(180)	(25)	180	Reallocation of undistributed earnings	(581)	(77)	
Allocation of undistributed earnings	Allocation of undistributed earnings	\$ 20,285	\$ 2,707	\$ 19,984	Allocation of undistributed earnings	\$ 38,793	\$ 5,097	\$ 3
Denominator	Denominator				Denominator			
Number of shares used in basic computation	Number of shares used in basic computation	299,815	46,182	334,819	Number of shares used in basic computation	300,310	45,430	32
Weighted-average effect of dilutive securities	Weighted-average effect of dilutive securities				Weighted-average effect of dilutive securities			
Add:	Add:				Add:			
Conversion of Class B to Class A common shares outstanding	Conversion of Class B to Class A common shares outstanding	46,182	0	0	Conversion of Class B to Class A common shares outstanding			
Conversion of Class B to Class A shares outstanding	Conversion of Class B to Class A shares outstanding				Conversion of Class B to Class A shares outstanding	45,430	0	
Restricted stock units and other contingently issuable shares	Restricted stock units and other contingently issuable shares	87	0	6,125	Restricted stock units and other contingently issuable shares	15	0	1
Number of shares used in per share computation	Number of shares used in per share computation	346,084	46,182	340,944	Number of shares used in per share computation	345,755	45,430	33
Diluted net income per share	Diluted net income per share	\$ 58.61	\$ 58.61	\$ 58.61	Diluted net income per share	\$ 112.20	\$ 112.20	\$ 1

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Note 13. Compensation Plans

Stock Plans

Our stock plans include the Alphabet Amended and Restated 2012 Stock Plan, the Alphabet 2021 Stock Plan and Other Bet stock-based plans. Under our stock plans, RSUs and other types of awards may be granted. An RSU award is an agreement to issue shares of our publicly traded Class C stock at the time the award vests. RSUs granted to participants under the Alphabet 2012 Stock Plan generally vest over four years contingent upon employment or service with us on the vesting date.

As of December 31, 2020 December 31, 2021, there were 38,777,813 37,479,707 shares of Class C stock reserved for future issuance under our the Alphabet 2012 2021 Stock Plan.

Stock-Based Compensation

For the years ended December 31, 2018 December 31, 2019, 2019 2020, and 2020, 2021, total stock-based compensation expense was \$10.0 billion \$11.7 billion, \$11.7 billion \$13.4 billion, and \$13.4 billion \$15.7 billion, including amounts associated with awards we expect to settle in Alphabet stock of \$9.4 billion, \$10.8 billion, \$12.8 billion, and \$12.8 billion \$15.1 billion, respectively.

For the years ended December 31, 2018 December 31, 2019, 2019 2020, and 2020, 2021, we recognized tax benefits on total stock-based compensation expense, which are reflected in the provision for income taxes in the Consolidated Statements of Income, of \$1.5 billion \$1.8 billion, \$1.8 billion \$2.7 billion, and \$2.7 billion \$3.1 billion, respectively.

For the years ended December 31, 2018 December 31, 2019, 2019 2020, and 2020, 2021, tax benefit realized related to awards vested or exercised during the period was \$2.1 billion, \$2.2 billion \$3.6 billion, and \$3.6 billion \$5.9 billion, respectively. These amounts do not include the indirect effects of stock-based awards, which primarily relate to the research and development R&D tax credit.

Stock-Based Award Activities

The following table summarizes the activities for our unvested Alphabet RSUs for the year ended December 31, 2020 December 31, 2021:

				Unvested Restricted Stock Units				Unvested Restricted Stock Units	
				Number of Shares	Weighted- Average Grant-Date Fair Value			Number of Shares	Weighted- Average Grant-Date Fair Value
Unvested as of December 31, 2019				19,394,236	\$ 1,055.22				
Unvested as of December 31, 2020						Unvested as of December 31, 2020		19,288,793	\$ 1,262.13
Granted	Granted	12,647,562	1,407.97			Granted	10,582,700	\$ 1,945.36	
Vested	Vested	(11,643,670)	1,089.31			Vested	(11,209,486)	\$ 1,345.12	
Forfeited/canceled	Forfeited/canceled	(1,109,335)	1,160.01			Forfeited/canceled	(1,767,294)	\$ 1,425.81	
Unvested as of December 31, 2020				19,288,793	\$ 1,262.13				
Unvested as of December 31, 2021						Unvested as of December 31, 2021		16,894,713	\$ 1,621.35

The provision for income taxes consists of the following (in millions):

		Year Ended December 31,		
		2018	2019	2020
Current:				
Federal and state		\$ 2,153	\$ 2,424	\$
Foreign		1,251	2,713	
Total		3,404	5,137	
Deferred:				
Federal and state		907	286	
Foreign		(134)	(141)	
Total		773	145	
Provision for income taxes		\$ 4,177	\$ 5,282	\$

		Year Ended December 31,		
		2019	2020	2021
Current:				
Federal and state		\$ 2,424	\$ 4,789	\$
Foreign		2,713	1,687	
Total		5,137	6,476	
Deferred:				
Federal and state		286	1,552	
Foreign		(141)	(215)	
Total		145	1,337	
Provision for income taxes		\$ 5,282	\$ 7,813	\$

The reconciliation of federal statutory income tax rate to our effective income tax rate is as follows:

		Year Ended December 31,					Year Ended December 31,		
		2018	2019	2020			2019	2020	2021
U.S. federal statutory tax rate	U.S. federal statutory tax rate	21.0 %	21.0 %	21.0 %	U.S. federal statutory tax rate		21.0 %	21.0 %	21.0 %
Foreign income taxed at different rates	Foreign income taxed at different rates	(4.4)	(4.9)	(0.3)	Foreign income taxed at different rates		(4.9)	(0.3)	0.2
Foreign-derived intangible income deduction	Foreign-derived intangible income deduction	(0.5)	(0.7)	(3.0)	Foreign-derived intangible income deduction		(0.7)	(3.0)	(2.5)
Stock-based compensation expense	Stock-based compensation expense	(2.2)	(0.7)	(1.7)	Stock-based compensation expense		(0.7)	(1.7)	(2.5)
Federal research credit	Federal research credit	(2.4)	(2.5)	(2.3)	Federal research credit		(2.5)	(2.3)	(1.6)
Impact of the Tax Cuts and Jobs Act		(1.3)	(0.6)	0.0					
European Commission fines		3.1	1.0	0.0					
Deferred tax asset valuation allowance	Deferred tax asset valuation allowance	(2.0)	0.0	1.4	Deferred tax asset valuation allowance		0.0	1.4	0.6

State and local income taxes	State and local income taxes	(0.4)		1.1		1.1	State and local income taxes	1.1		1.1		1.1
Other adjustments		1.1		(0.4)		0.0						
Effective tax rate	Effective tax rate	12.0	%	13.3	%	16.2	%	Effective tax rate	13.3	%	16.2	%

Our effective tax rate for 2018 and 2019 was affected significantly by earnings realized in foreign jurisdictions with statutory tax rates lower than the federal statutory tax rate. Substantially all of the income from foreign operations was earned by an Irish subsidiary. As of December 31, 2019, we have simplified our corporate legal entity structure and now intellectual property from the U.S. that was previously licensed from Bermuda resulting in an increase in the portion of our income earned in the U.S.

On July 27, 2015, the United States U.S. Tax Court, in an opinion in *Altera Corp. v. Commissioner*, invalidated the portion of the Treasury regulations issued under IRC Section 482 requiring related-party participants in a cost sharing arrangement to share stock-based compensation costs. The U.S. Tax Court issued the final decision on December 28, 2015. As a result of that decision, we recorded a tax benefit related to the anticipated reimbursement of cost share payment for previously shared stock-based compensation costs.

On June 7, 2019, the United States U.S. Court of Appeals for the Ninth Circuit overturned the 2015 Tax Court decision in *Altera Corp. v. Commissioner*, and upheld the portion of the Treasury regulations issued under IRC Section 482 requiring related-party participants in a cost sharing arrangement to share stock-based compensation costs. As a result of the Ninth Circuit court decision, our cumulative net tax benefit of \$418 million related to previously shared stock-based compensation costs was reversed in the year ended December 31, 2019.

In 2020, there was an increase in valuation allowance for net deferred tax assets that are not likely to be realized relating to certain of our Other Bets.

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Deferred Income Taxes

Deferred income taxes reflect the net effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts for income tax purposes. Significant components of our deferred tax assets and liabilities are as follows (in millions):

		As of December 31,		As of December 31,	
		2019	2020	2020	2021
Deferred tax assets:	Deferred tax assets:			Deferred tax assets:	
Stock-based compensation expense		\$ 421	\$ 518		
Accrued employee benefits	Accrued employee benefits	463	580	Accrued employee benefits	\$ 580
Accruals and reserves not currently deductible	Accruals and reserves not currently deductible	1,047	1,049	Accruals and reserves not currently deductible	1,049
Tax credits	Tax credits	3,264	3,723	Tax credits	3,723
Net operating losses	Net operating losses	771	1,085	Net operating losses	1,085
Operating leases	Operating leases	1,876	2,620	Operating leases	2,620
Intangible assets	Intangible assets	164	1,525	Intangible assets	1,525
Other	Other	226	463	Other	981
Total deferred tax assets	Total deferred tax assets	8,232	11,563	Total deferred tax assets	11,563
Valuation allowance	Valuation allowance	(3,502)	(4,823)	Valuation allowance	(4,823)
Total deferred tax assets net of valuation allowance	Total deferred tax assets net of valuation allowance	4,730	6,740	Total deferred tax assets net of valuation allowance	6,740
Deferred tax liabilities:	Deferred tax liabilities:			Deferred tax liabilities:	
Property and equipment, net	Property and equipment, net	(1,798)	(3,382)	Property and equipment, net	(3,382)
Renewable energy investments		(466)	(415)		
Foreign Earnings		(373)	(383)		
Net investment gains	Net investment gains	(1,074)	(1,901)	Net investment gains	(1,901)

Operating leases	Operating leases	(1,619)	(2,354)	Operating leases	(2,354)	(2,227)
Other	Other	(380)	(782)	Other	(1,580)	(947)
Total deferred tax liabilities	Total deferred tax liabilities	(5,710)	(9,217)	Total deferred tax liabilities	(9,217)	(11,644)
Net deferred tax assets (liabilities)	Net deferred tax assets (liabilities)	\$ (980)	\$ (2,477)	Net deferred tax assets (liabilities)	\$ (2,477)	\$ (3,977)

As of December 31, 2020 December 31, 2021, our federal, state, and foreign net operating loss carryforwards for income tax purposes were approximately \$3.1 billion \$5.6 billion \$4.6 billion, and \$1.4 billion \$1.7 billion respectively. If not utilized, the federal net operating loss carryforwards will begin to expire in 2023, foreign net operating loss carryforwards will begin to expire in 2024 2025 and the state net operating loss carryforwards will begin to expire in 2028. It is more likely than not that certain net operating loss carryforwards will be realized; therefore, we have recorded a valuation allowance against them. The net operating loss carryforwards are subject to various annual limitations under the tax laws of the various jurisdictions.

As of December 31, 2020 December 31, 2021, our California research and development credit R&D carryforwards for income tax purposes were approximately \$3.7 billion \$5.0 billion. We believe the state tax credit is not likely to be realized.

As of December 31, 2020 December 31, 2021, our investment tax credit carryforwards for state income tax purposes were approximately \$700 million and will begin to expire in 2023. We use the flow-through method of accounting for investment tax credits. We believe this tax credit is not likely to be realized.

As of December 31, 2021, we maintained a valuation allowance with respect to California deferred tax assets, certain federal net operating losses, certain state tax credits, net operating losses relating to certain of our Other Bets, and certain foreign net operating losses that we believe are not likely to be realized. We continue to reassess the remaining valuation allowance quarterly, and if future evidence allows for a partial or full release of the valuation allowance, a tax benefit will be recorded accordingly.

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Uncertain Tax Positions

The following table summarizes the activity related to our gross unrecognized tax benefits (in millions):

		Year Ended December 31,					Year Ended December 31,		
		2018	2019	2020			2019	2020	2021
Beginning gross unrecognized tax benefits	Beginning gross unrecognized tax benefits	\$ 4,696	\$ 4,652	\$ 3,377	Beginning gross unrecognized tax benefits	\$ 4,652	\$ 3,377	\$ 3,377	\$ 3,377
Increases related to prior year tax positions	Increases related to prior year tax positions	321	938	372	Increases related to prior year tax positions	938	372		
Decreases related to prior year tax positions	Decreases related to prior year tax positions	(623)	(143)	(557)	Decreases related to prior year tax positions	(143)	(557)		
Decreases related to settlement with tax authorities	Decreases related to settlement with tax authorities	(191)	(2,886)	(45)	Decreases related to settlement with tax authorities	(2,886)	(45)		
Increases related to current year tax positions	Increases related to current year tax positions	449	816	690	Increases related to current year tax positions	816	690	1,111	1,111
Ending gross unrecognized tax benefits	Ending gross unrecognized tax benefits	\$ 4,652	\$ 3,377	\$ 3,837	Ending gross unrecognized tax benefits	\$ 3,377	\$ 3,837	\$ 5,000	\$ 5,000

The total amount of gross unrecognized tax benefits was \$4.7 billion \$3.4 billion, \$3.4 billion \$3.8 billion, and \$3.8 billion \$5.2 billion as of December 31, 2018 December 31, 2019, 2020, and 2020, 2021, respectively, of which \$2.9 billion \$2.3 billion, \$2.3 billion \$2.6 billion, and \$2.6 billion \$3.7 billion, if recognized, would affect our effective tax rate, respectively. The decrease in gross unrecognized tax benefits in 2019 was primarily as a result of the resolution of multi-year audits.

As of December 31, 2019 December 31, 2020 and 2020, 2021, we accrued \$130 million \$222 million and \$222 million \$270 million in interest and penalties in provision for income taxes, respectively.

We file income tax returns in the U.S. federal jurisdiction and in many state and foreign jurisdictions, our jurisdictions. Our two major tax jurisdictions are the U.S. federal and California. We are subject to the continuous examination of our income tax returns by the IRS and other tax authorities. The IRS is currently examining our 2016 through 2018 tax returns.

also received tax assessments in multiple foreign jurisdictions asserting transfer pricing adjustments or permanent establishment. We continue to defend any and all such presented.

The tax years 2011 2014 through 2019 2020 remain subject to examination by the appropriate governmental agencies for Irish tax purposes. There are other ongoing audits in other jurisdictions that are not material to our financial statements.

We regularly assess the likelihood of adverse outcomes resulting from these examinations to determine the adequacy of our provision for income taxes. We continue to monitor progress of ongoing discussions with tax authorities and the effect, if any, of the expected expiration of the statute of limitations in various taxing jurisdictions.

We believe that an adequate provision has been made for any adjustments that may result from tax examinations. However, the outcome of tax audits cannot be predicted with certainty. If any issues addressed in our tax audits are resolved in a manner not consistent with management's expectations, we could be required to adjust our provision for income taxes in the period such resolution occurs. Although the timing of resolution, settlement, and closure of audits is not certain, we do not believe it is reasonably possible that our unrecognized tax benefits will materially change from certain U.S. federal, state and non U.S. tax positions could decrease by approximately \$2.0 billion in the next 12 months. Positions that may be included in various U.S. and non-U.S. matters.

Note 15. Information about Segments and Geographic Areas

Beginning in the fourth quarter of 2020, we report our segment results as Google Services, Google Cloud, and Other Bets:

- Google Services includes products and services such as ads, Android, Chrome, hardware, Google Maps, Google Play, Search, and YouTube. Google Services generates revenues primarily from advertising; sales of apps and in-app purchases, digital content products, and hardware; and fees received for subscription-based products such as YouTube Premium and YouTube TV.
- Google Cloud includes Google's infrastructure and data analytics platforms, platform services, collaboration tools, and other services for enterprise customers. Google Cloud generates revenues primarily from fees received for Google Cloud Platform services, and Google Workspace (formerly known as G Suite) collaboration tools. Google Cloud also includes enterprise services.
- Other Bets is a combination of multiple operating segments that are not individually material. Revenues from the Other Bets are derived primarily through from internet services as well as licensing health technology and R&D internet services.

Revenues, and certain costs, such as costs associated with content and traffic acquisition, certain engineering activities, and hardware, costs and other as well as certain other expenses are directly attributable to our segments. Due to the integrated nature of Alphabet, other costs and expenses, such as technical infrastructure and office facilities, are managed centrally at a consolidated level. The associated costs, including depreciation and impairment, are allocated to operating segments as a service cost generally based on usage or headcount.

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centrally at a consolidated level. The associated costs, including depreciation and impairment, are allocated to operating segments as a service cost generally based on usage or headcount.

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Unallocated corporate costs primarily include corporate initiatives, corporate shared costs, such as finance and legal, including certain fines and settlements, as well as costs associated with certain shared research and development R&D activities. Additionally, hedging gains (losses) related to revenue are included in corporate costs.

Our Chief Operating Decision Maker does not evaluate operating segments evaluated using asset information.

Information about segments during the periods presented were as follows (in millions). For comparative purposes, amounts in prior periods have been recast:

		Year Ended December 31,					Year Ended December 31,	
		2018	2019	2020			2019	2020
Revenues:	Revenues:				Revenues:			
Google Services	Google Services	\$ 130,524	\$ 151,825	\$ 168,635	Google Services	\$ 151,825	\$ 168,635	\$ 230,000
Google Cloud	Google Cloud	5,838	8,918	13,059	Google Cloud	8,918	13,059	19,000
Other Bets	Other Bets	595	659	657	Other Bets	659	657	1,000
Hedging gains (losses)	Hedging gains (losses)	(138)	455	176	Hedging gains (losses)	455	176	1,000
Total revenues	Total revenues	\$ 136,819	\$ 161,857	\$ 182,527	Total revenues	\$ 161,857	\$ 182,527	\$ 250,000
Operating income (loss):	Operating income (loss):				Operating income (loss):			
Google Services	Google Services	\$ 43,137	\$ 48,999	\$ 54,606	Google Services	\$ 48,999	\$ 54,606	\$ 90,000
Google Cloud	Google Cloud	(4,348)	(4,645)	(5,607)	Google Cloud	(4,645)	(5,607)	(10,000)
Other Bets	Other Bets	(3,358)	(4,824)	(4,476)	Other Bets	(4,824)	(4,476)	(10,000)

Corporate costs, unallocated ⁽¹⁾	Corporate costs, unallocated ⁽¹⁾	(7,907)	(5,299)	(3,299)	Corporate costs, unallocated ⁽¹⁾	(5,299)	(3,299)	(4,299)
Total income from operations	Total income from operations	\$ 27,524	\$ 34,231	\$ 41,224	Total income from operations	\$ 34,231	\$ 41,224	\$ 71,224

(1) Corporate costs, unallocated includes a fine of \$5.1 billion for the year ended December 31, 2018 and a fine and legal settlement totaling \$2.3 billion for the year ended December 31, 2019.

For revenues by geography, see Note 2.

The following table presents certain of our long-lived assets by geographic area, which includes property and equipment, net and operating lease assets (in millions).:

		As of December 31, 2019	As of December 31, 2020	As of December 31, 2020	
Long-lived assets:	Long-lived assets:			Long-lived assets:	
United States	United States	\$ 63,102	\$ 69,315	United States	\$69,315
International	International	21,485	27,645	International	27,645
Total long-lived assets	Total long-lived assets	\$ 84,587	\$ 96,960	Total long-lived assets	\$96,960

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ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our chief executive officer and chief financial officer, evaluated the effectiveness of our disclosure controls and procedures pursuant to Rule 13a-15 under the Exchange Act, as of the end of the period covered by this Annual Report on Form 10-K.

Based on this evaluation, our chief executive officer and chief financial officer concluded that, as of December 31, 2020 and December 31, 2021, our disclosure controls and procedures were designed at a reasonable assurance level and are effective to provide reasonable assurance that information we are required to disclose in reports that we file or submit under the Exchange Act 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 timely decisions regarding required disclosure.

Changes in Internal Control over Financial Reporting

We rely extensively on information systems to manage our business and summarize and report operating results. In 2019, we began a multi-year implementation of a new global ERP system, which will replace much of our existing core financial systems. The ERP system is designed to accurately maintain our financial records, enhance the flow of financial information, improve data management and provide timely information to our management team. The implementation is expected to occur in phases over the next several years. In the initial phase, we completed the implementation of certain of our subledgers, which included changes to our general ledger processes, procedures and consolidated internal control over financial reporting systems, was completed during the third quarter of 2020. There have been no changes in our internal control over financial reporting that occurred during the quarter ended December 31, 2020 or December 31, 2021 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. However, as the phased implementation of the new ERP system continues, we will change our processes and procedures, which in turn, could result in changes to our internal control over financial reporting. As such changes occur, we will evaluate quarterly whether such changes materially affect our internal control over financial reporting.

As a result of COVID-19, our global workforce continued to operate primarily in a work from home environment for the quarter ended December 31, 2020 and December 31, 2021. While our existing controls were not specifically designed for a work from home environment, we continue to operate and evolve our work model in our current work from home operating environment, and in response to the uneven effects of the ongoing pandemic around the world, we believe that our internal controls over financial reporting continue to be effective. We have continued to re-evaluate and refine our financial reporting process to provide reasonable assurance that we could report our financial results accurately and timely in a timely manner.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rule 13a-15(f) of the Exchange Act. Our management conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework). Based on this evaluation, management concluded that our internal control over financial reporting was effective as of December 31, 2020 and December 31, 2021. Management reviewed the results of its assessment with our Audit and Compliance Committee. The effectiveness of our internal control over financial reporting as of December 31, 2020 and December 31, 2021 has been audited by Ernst & Young LLP, an independent registered public accounting firm, as stated in its report included in Item 8 of this Annual Report on Form 10-K.

Limitations on Effectiveness of Controls and Procedures

In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are inherent constraints and that management is required to apply its judgment in evaluating the benefits of possible controls and procedures relative to their costs.

ITEM 9B. OTHER INFORMATION

None.

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ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

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PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this item will be included under the caption "Directors, Executive Officers, and Corporate Governance" in our Proxy Statement for 2021 the 2022 Meeting of Stockholders to be filed with the SEC within 120 days of the fiscal year ended December 31, 2020 (2021 December 31, 2021 (2022 Proxy Statement) and is incorporated herein by reference. The information required by this item regarding delinquent filers pursuant to Item 405 of Regulation S-K will be included under the caption "Section "Delinquent Section Beneficial Ownership Reporting Compliance" Reports" in the 2021 2022 Proxy Statement and is incorporated herein by reference.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this item will be included under the captions "Director Compensation," "Executive Compensation" and "Directors, Executive Officers, and Corporate Governance—Corporate Governance and Board Matters—Compensation Committee Interlocks and Insider Participation" in the 2021 2022 Proxy Statement and is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by this item will be included under the captions "Common Stock Ownership of Certain Beneficial Owners and Management" and "Equity Compensation Information" in the 2021 2022 Proxy Statement and is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this item will be included under the captions "Certain Relationships and Related Transactions" and "Directors, Executive Officers, and Corporate Governance—Corporate Governance and Board Matters—Director Independence" in the 2021 2022 Proxy Statement and is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this item will be included under the caption "Independent Registered Public Accounting Firm" in the 2021 2022 Proxy Statement and is incorporated herein by reference.

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PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

We have filed the following documents as part of this Annual Report on Form 10-K:

1. Consolidated Financial Statements

Financial Statements:

[Consolidated Balance Sheets](#)
[Consolidated Statements of Income](#)
[Consolidated Statements of Comprehensive Income](#)
[Consolidated Statements of Stockholders' Equity](#)
[Consolidated Statements of Cash Flows](#)
[Notes to Consolidated Financial Statements](#)

2. Financial Statement Schedules

Schedule II: Valuation and Qualifying Accounts

The table below details the activity of the allowance for credit losses and sales credits for the years ended **December 31, 2018**, **December 31, 2019**, **2019** **2020** and **2020** **2021** (in m

		Balance at Beginning of Year	Additions	Usage	Balance at End of Year		Balance at Beginning of Year	Additions	Usage	Balan End of
Year ended December 31, 2018		\$ 674	\$ 1,115	\$ (1,060)	\$ 729					
Year ended December 31, 2019	Year ended December 31, 2019	\$ 729	\$ 1,481	\$ (1,457)	\$ 753	Year ended December 31, 2019	\$ 729	\$ 1,481	\$ (1,457)	\$
Year ended December 31, 2020	Year ended December 31, 2020	\$ 753	\$ 2,013	\$ (1,422)	\$ 1,344	Year ended December 31, 2020	\$ 753	\$ 2,013	\$ (1,422)	\$
Year ended December 31, 2021						Year ended December 31, 2021	\$ 1,344	\$ 2,092	\$ (2,047)	\$

Note: Additions to the allowance for credit losses are charged to expense. Additions to the allowance for sales credits are charged against revenues.

All other schedules have been omitted because they are not required, not applicable, or the required information is otherwise included.

3. Exhibits

Exhibit Number	Description	Incorporated by reference herein	
		Form	Date
2.01	Agreement and Plan of Merger, dated October 2, 2015, by and among Google Inc., the Registrant and Maple Technologies Inc.	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
3.01	Amended and Restated Certificate of Incorporation of the Registrant, dated October 2, 2015	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
3.02	Amended and Restated Bylaws of the Registrant, dated October 21, 2020	Current Report on Form 8-K 8-K/A (File No. 001-37580)	October 27, 2020
4.01	Specimen Class A Common Stock certificate	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
4.02	Specimen Class C Capital Stock certificate	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
4.03	Alphabet Inc. Deferred Compensation Plan	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
4.04	Transfer Restriction Agreement, dated October 2, 2015, between the Registrant and Larry Page and certain of his affiliates	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
4.05	Transfer Restriction Agreement, dated October 2, 2015, between the Registrant and Sergey Brin and certain of his affiliates	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
4.06	* Joinder Agreement, dated December 31, 2021, among the Registrant, Sergey Brin and certain of his affiliates		

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Exhibit Number	Description	Incorporated by reference herein	
		Form	Date

4.05		Transfer Restriction Agreement, dated October 2, 2015, between the Registrant and Sergey Brin and certain of his affiliates	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
4.06	4.07	Transfer Restriction Agreement, dated October 2, 2015, between the Registrant and Eric E. Schmidt and certain of its affiliates	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
4.07	4.08	Class C Undertaking, dated October 2, 2015, executed by the Registrant	Current Report on Form 8-K (File No. 001-37580)	October 2, 2015
4.08	4.09	Indenture, dated February 12, 2016, between the Registrant and The Bank of New York Mellon Trust Company, N.A., as Trustee	Registration Statement on Form S-3 (File No. 333-209510)	February 12, 2016
4.09	4.10	Registrant Registration Rights Agreement dated December 14, 2015	Registration Statement on Form S-3 (File No. 333-209518)	February 12, 2016
4.10	4.11	First Supplemental Indenture, dated April 27, 2016, between the Registrant and The Bank of New York Mellon Trust Company, N.A., as trustee	Current Report on Form 8-K (File No. 001-37580)	April 27, 2016
4.11		Form of the Registrant's 3.625% Notes due 2021 (included in Exhibit 4.10)		
4.12		Form of the Registrant's 3.375% Notes due 2024 (included in Exhibit 4.10) 4.11)		
4.13		Form of the Registrant's 1.998% Note due 2026	Current Report on Form 8-K (File No. 001-37580)	August 9, 2016
4.14		Form of Global Note representing the Registrant's 0.450% notes due 2025	Current Report on Form 8-K (File No. 001-37580)	August 5, 2020
4.15		Form of Global Note representing the Registrant's 0.800% notes due 2027	Current Report on Form 8-K (File No. 001-37580)	August 5, 2020
4.16		Form of Global Note representing the Registrant's 1.100% notes due 2030	Current Report on Form 8-K (File No. 001-37580)	August 5, 2020
4.17		Form of Global Note representing the Registrant's 1.900% notes due 2040	Current Report on Form 8-K (File No. 001-37580)	August 5, 2020
4.18		Form of Global Note representing the Registrant's 2.050% notes due 2050	Current Report on Form 8-K (File No. 001-37580)	August 5, 2020
4.19		Form of Global Note representing the Registrant's 2.250% notes due 2060	Current Report on Form 8-K (File No. 001-37580)	August 5, 2020
4.20	*	Description of Registrant's Securities	Annual Report on Form 10-K (File No. 001-37580)	February 4, 2020
10.01	u	Form of Indemnification Agreement entered into between the Registrant, its affiliates and its directors and officers	Current Report on Form 8-K (File No. 001-37580)	
10.02	u	Compensation Plan Agreement, dated October 2, 2015, between Google Inc. and the Registrant	Current Report on Form 8-K (File No. 001-37580)	
10.03	u	Director Arrangements Agreement, dated October 2, 2015	Current Report on Form 8-K	

		2, 2012, between Google Inc. and the Registrant	8-K (File No. 001-37580)
10.04	u	Alphabet Inc. Deferred Compensation Plan	Current Report on Form 8-K (File No. 001-37580)
10.05	u	Google Inc. 2004 Stock Plan, as amended	Current Report on Form 8-K (File No. 000-50726)
10.05.1	u	Google Inc. 2004 Stock Plan - Form of Google Stock Option Agreement	Annual Report on Form 10-K (File No. 000-50726)
10.05.2	u	Google Inc. 2004 Stock Plan - Form of Google Restricted Stock Unit Agreement	Annual Report on Form 10-K (File No. 000-50726)
10.05.3	u	Google Inc. 2004 Stock Plan - Amendment to Stock Option Agreements	Registration Statement on Form S-3 (File No. 333-142243)
10.06	u	Alphabet Inc. Amended and Restated 2012 Stock Plan	Current Report on Form 8-K (File No. 001-37580)
Alphabet Inc. Amended and Restated 2012 Stock Plan - Performance			
Exhibit Number	Description		Incorporated by reference herein
			Form Date
10.05.2 10.06.1	u	Google Inc. 2004 Stock Plan - Form of Google Restricted Stock Unit Agreement	Annual Report on Form 10-K (File No. 000-50726) March 30, 2005
10.05.3	u	Google Inc. 2004 Stock Plan - Amendment to Stock Option Agreements	Registration Statement on Form S-3 (File No. 333-142243) April 20, 2007
10.06	u	Alphabet Inc. Amended and Restated 2012 Stock Plan	Current Report on Form 8-K (File No. 001-37580) June 5, 2020
10.06.1	u	Alphabet Inc. Amended and Restated 2012 Stock Plan - Form of Alphabet Restricted Stock Unit Agreement	Annual Report on Form 10-K (File No. 000-50726) 001-37580 February 4, 2020
10.06.2	u	Alphabet Inc. Amended and Restated 2012 Stock Plan - Performance	Annual Report on Form 10-K (File No. 000-50726) 001-37580

10.07	u	Stock Unit Agreement Motorola Mobility Holdings, Alphabet Inc. 2011 Incentive Compensation 2021 Stock Plan	Registration Statement Current Report on Form S-8 (File 8-K (file No. 333-181661) 001-37580)	June 2
10.07.1	u	Alphabet Inc. 2021 Stock Plan - Form of Alphabet Restricted Stock Unit Agreement	May 24, 2012 Quarterly Report on Form 10-Q (file No. 001-37580)	July 28, 2021
10.07.2	u *	Alphabet Inc. 2021 Stock Plan - Form of Alphabet 2022 Non-CEO Performance Stock Unit Agreement		
10.08	u *	Alphabet Inc. Company Bonus Plan		
14.01		Code of Conduct of the Registrant as amended on September 21, 2017	Annual Report on Form 10-K (File No. 001-37580)	February 6, 2018
21.01	*	Subsidiaries of the Registrant		
23.01	*	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm		
24.01	*	Power of Attorney (incorporated by reference to the signature page of this Annual Report on Form 10-K)		
31.01	*	Certification of Chief Executive Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002		
31.02	*	Certification of Chief Financial Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002		
32.01	‡	Certifications of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002		
99.01		Stipulation and Agreement of Settlement	Current Report on Form 8-K (File No. 001-37580)	September 5, 2020
99.02		Notice of Pendency and Proposed Settlement of Derivative Actions	Current Report on Form 8-K (File No. 001-37580)	October 23, 2020

101.INS	*	Inline XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.	document.	document
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		Cover Page Interactive Data File (embedded within the Inline XBRL document and contained in Exhibit 101)		

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Exhibit	Incorporated by reference herein		
	Number	Description	Date
	101.PRE	* XBRL Taxonomy Extension Presentation Linkbase Document	
	104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)	

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Indicates management compensatory plan, contract, or arrangement.

*

Filed herewith.

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Furnished herewith.

ITEM 16. FORM 10-K SUMMARY

None.

SIGNATURES

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Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this Annual Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized.

Date: February 2, 2021 February 1, 2022

ALPHABET INC.

By:

/s/ SUNDAR PICHAI

Sundar Pichai

Chief Executive Officer

(Principal Executive Officer of the Registrant)

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Sundar Pichai and Ruth M. Porat, jointly and severally, his attorneys-in-fact, with the power of substitution, for him or her in any and all capacities, to sign any amendments to this Annual Report on Form 10-K and to file the same, with thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorneys-in-fact, or his substitute or substitutes, may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this Annual Report on Form 10-K has been signed below by the following persons on behalf of the Registrant in the capacities and on the dates indicated.

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<u>Signature</u>	<u>Title</u>	<u>Date</u>
/s/ SUNDAR PICHAI	Chief Executive Officer and Director (Principal Executive Officer)	February 2, 2021 1, 2021
Sundar Pichai		
/s/ RUTH M. PORAT	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	February 2, 2021 1, 2021
Ruth M. Porat		
/s/ AMIE THUENER O'TOOLE	Vice President and Chief Accounting Officer (Principal Accounting Officer)	February 2, 2021 1, 2021
Amie Thuener O'Toole		
/s/ FRANCES H. ARNOLD	Director	February 2, 2021 1, 2021
Frances H. Arnold		
/s/ SERGEY BRIN	Co-Founder and Director	February 2, 2021 1, 2021
Sergey Brin		
/s/ L. JOHN DOERR	Director	February 2, 2021 1, 2021
L. John Doerr		
/s/ ROGER W. FERGUSON, JR.	Director	February 2, 2021 1, 2021
Roger W. Ferguson, Jr.		
/s/ JOHN L. HENNESSY	Director, Chair	February 2, 2021 1, 2021
John L. Hennessy		
/s/ ANN MATHER	Director	February 2, 2021 1, 2021
Ann Mather		
/s/ ALAN R. MULALLY	Director	February 2, 2021 1, 2021
Alan R. Mulally		
/s/ LARRY PAGE	Co-Founder and Director	February 2, 2021 1, 2021
Larry Page		
/s/ K. RAM SHRIRAM	Director	February 2, 2021 1, 2021
K. Ram Shriram		
/s/ Robin L. Washington	Director	February 2, 2021 1, 2021
Robin L. Washington		

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Exhibit

JOINDER AGREEMENT

December 31, 2021

Reference is hereby made to that certain Transfer Restriction Agreement, dated October 2, 2015 (the "Transfer Restriction Agreement"), among Alphabet Inc., a Delaware corporation, Sergey Brin and his Permitted Entities. Unless otherwise defined herein, terms defined in the Transfer Restriction Agreement and used herein shall have the meanings given to them in the Transfer Restriction Agreement.

Each of the undersigned parties hereby agrees that it is, and shall be deemed to be for all purposes, a Permitted Entity, a Holder and a member of the Holder Group under the Transfer Restriction Agreement, and bound by all of the terms and conditions of the Transfer Restriction Agreement, effective October 2, 2015, as if it were an original signatory thereto.

This Agreement shall be governed by, and construed in accordance with, the laws of the State of Delaware applicable to contracts executed in or to be performed entirely within such State, without regard to the conflict of laws principles thereof which would result in the application of the laws of any other jurisdiction.

This Agreement may be executed in one or more counterparts (including by facsimile or electronic signature and by DocuSign, electronic mail or PDF), each of which when executed shall be deemed to be an original, but all of which taken together shall constitute one and the same agreement.

* * * * *

(Signature Page Follows)

IN WITNESS WHEREOF, the Permitted Entities named below have executed this Agreement as of the date set forth above and agree to be bound by the terms of this Agreement applicable to Permitted Entities as Holders and members of the Holder Group.

Alphabet Inc.

/s/ Kathryn Hall

Name: KATHRYN HALL

Title: Assistant Secretary

Sergey Brin

/s/ Sergey Brin

Sergey Brin as Trustee

SMB Pacific 2021 Charitable Remainder Unitrust I

/s/ Sergey Brin

Name: SERGEY BRIN

Title: Trustee

Sergey Brin as Trustee

SMB Pacific 2021 Charitable Remainder Unitrust II

/s/ Sergey Brin

Name: SERGEY BRIN

Title: Trustee

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DESCRIPTION OF SECURITIES

The following summary of the rights of our Class A Common Stock, Class B Common Stock, Class C Capital Stock, and preferred stock (collectively, the "Alphabet securities") does not purport to be complete. This summary is subject to and qualified by the provisions of our Amended and Restated Certificate of Incorporation ("[Certificate of Incorporation](#)"), Amended and Restated Bylaws ("[Bylaws](#)"), the terms of our Class C Undertaking (as defined below), and certain Transfer Restriction Agreements (as defined below), copies of which are incorporated by reference. Additionally, the Delaware General Corporation Law ("[DGCL](#)"), as amended, also affects the terms of our capital stock.

Our Certificate of Incorporation provides for (1) the Class A Common Stock, which has one vote per share; (2) the Class B Common Stock, which has 10 votes per share; and (3) the Class C Capital Stock, which has no voting rights unless otherwise required by law. Our Certificate of Incorporation also provides for 100,000,000 shares of preferred stock.

Capital Stock

Authorized Capital Stock

Our authorized capital stock consists of 15,100,000,000 shares, each with a par value of \$0.001 per share, of which:

- 9,000,000,000 shares are designated as Class A Common Stock;
- 3,000,000,000 shares are designated as Class B Common Stock;
- 3,000,000,000 shares are designated as Class C Capital Stock; and
- 100,000,000 shares are designated as preferred stock.

At December 31, 2021, there were 300,736,598 shares of Class A Common Stock issued and outstanding, 44,664,772 shares of Class B Common Stock issued and outstanding, and 316,719,697 shares of Class C Capital Stock issued and outstanding. At that date, there were no shares of preferred stock outstanding. All of the outstanding shares of the Company's stock are fully paid and nonassessable.

Voting Rights

Holders of shares of Class A Common Stock and Class B Common Stock have identical rights, except that holders of shares of Class A Common Stock are entitled to one vote per share and holders of shares of Class B Common Stock are entitled to 10 votes per share. Holders of shares of Class A Common Stock and Class B Common Stock vote together as a single class on matters (including the election of directors) submitted to a vote of stockholders, unless otherwise required by law.

Holders of shares of Class C Capital Stock have no voting rights, unless otherwise required by law.

The DGCL could require the holders of any of the shares of Class A Common Stock, Class B Common Stock, or Class C Capital Stock to vote separately as a single class in the following circumstances:

- If we amended our Certificate of Incorporation to increase or decrease the par value of the shares of a class of stock, then the holders of the shares of that class would be required to vote separately to approve the proposed amendment.

- If we amended our Certificate of Incorporation in a manner that altered or changed the powers, preferences, or special rights of the shares of a class of stock, so as to affect them adversely, then the holders of the shares of that class would be required to vote separately to approve the proposed amendment.

As permitted by the DGCL and as set forth in our Certificate of Incorporation, the holders of shares of Class A Common Stock, Class B Common Stock, and Class C Capital Stock do not have the right to vote separately as a single class if the number of authorized shares of such class is increased or decreased. Rather, the number of authorized shares of Class A Common Stock, Class B Common Stock, and Class C Capital Stock may be increased or decreased (but not below the number of shares thereof then outstanding) by the affirmative vote of the holders of a majority of the voting power of the issued and outstanding shares of Class A Common Stock and Class B Common Stock, voting together as a single class.

We have not provided for cumulative voting for the election of directors.

Dividends

Subject to preferences that may apply to any shares of preferred stock outstanding at the time, the holders of shares of Class A Common Stock, Class B Common Stock, and Class C Capital Stock will be entitled to share equally, on a per share basis, in any dividends that our Board of Directors may determine to issue from time to time. In the event that a dividend is paid in the form of shares of Class A Common Stock or Class B Common Stock, or rights to acquire shares of Class A Common Stock or Class B Common Stock, (1) the holders of shares of Class A Common Stock shall receive Class A Common Stock, or rights to acquire shares of Class A Common Stock, as the case may be; (2) the holders of shares of Class B Common Stock shall receive shares of Class B Common Stock, or rights to acquire shares of Class B Common Stock, as the case may be; and (3) the holders of shares of Class C Capital Stock shall receive: shares of Class C Capital Stock, or rights to acquire shares of Class C Capital Stock, as the case may be.

Liquidation Rights

Upon our liquidation, dissolution or winding-up, the holders of shares of Class A Common Stock and Class B Common Stock shall be entitled to share equally in all assets remaining, payment of any liabilities and the liquidation preferences on any outstanding preferred stock. Immediately prior to the earlier of (1) any distribution of our assets in connection with liquidation, dissolution, or winding-up, or (2) any record date established to determine the holders of our capital stock entitled to receive such distribution, each share of Class C Capital Stock shall automatically be converted into one share of Class A Common Stock.

Conversion

Shares of Class A Common Stock are not convertible into any other shares of our capital stock.

Other than in connection with a liquidation as described above, shares of Class C Capital Stock are not convertible into any other shares of our capital stock.

Each share of Class B Common Stock is convertible at any time at the option of the holder into one share of Class A Common Stock upon written notice to our transfer agent. In addition, each share of Class B Common Stock shall convert automatically into one share of Class A Common Stock upon any transfer, whether or not for value, except for certain transfers described in our Certificate of Incorporation, including the following:

- Transfers between Larry Page and Sergey Brin, Google's co-founders, subject to the requirements of the Transfer Restriction Agreements, as amended (as described below).
- Transfers for tax and estate planning purposes, including to trusts, corporations, and partnerships established or controlled by a holder of Class B Common Stock.

In addition, partnerships or limited liability companies that held more than 5% of the total outstanding shares of Class B Common Stock as of the closing of Google's initial public offering in 2004 may distribute their shares of Class B Common Stock to their respective partners or members (who may further distribute the shares of Class B Common Stock to their respective partners or members) without triggering a conversion to shares of Class A Common Stock. Such distributions must be conducted in accordance with the ownership interests of such partners or members and the terms of any agreements binding the partnership or limited liability company.

The death of any holder of shares of Class B Common Stock who is a natural person will result in the conversion of his or her shares of Class B Common Stock, and any shares held by her permitted entities, into shares of Class A Common Stock. However, subject to the terms of the Transfer Restriction Agreements, either of Larry or Sergey may transfer voting control of his shares of Class B Common Stock and those held by his permitted entities to the other contingent or effective upon his death without triggering a conversion into shares of Class A Common Stock, but the shares of Class B Common Stock so transferred will convert to Class A Common Stock nine months after the death of the transferring founder.

Once transferred and converted into shares of Class A Common Stock, shares of Class B Common Stock shall not be reissued.

No class of our capital stock may be subdivided or combined unless the other classes of capital stock are concurrently subdivided or combined in the same proportion and in the same manner.

Equal Status

Except as expressly provided in our Certificate of Incorporation, shares of Class A Common Stock and Class B Common Stock have the same rights and privileges and rank equally, share ratably and are identical in all respects as to all matters. In the event of any merger, consolidation, or other business combination requiring the approval of our stockholders entitled to vote thereon (whether or not we are the surviving entity), the holders of shares of Class A Common Stock shall have the right to receive, or the right to elect to receive, the same form of consideration as the holders of shares of Class B Common Stock, and the holders of shares of Class A Common Stock shall have the right to receive, or the right to elect to receive, at least the same amount of consideration on a per share basis as the holders of shares of Class B Common Stock. In the event of any (1) tender or exchange offer to acquire any shares of Class A Common Stock or Class B Common Stock by any third party pursuant to an agreement to which we are a party, or (2) any tender or exchange offer by us to acquire any shares of Class A Common Stock or Class B Common Stock, the holders of shares of Class A Common Stock shall have the right to receive, or the right to elect to receive, the same form of consideration as the holders of shares of Class B Common Stock, and the holders of shares of Class A Common Stock shall have the right to receive, or the right to elect to receive, at least the same amount of consideration on a per share basis as the holders of shares of Class B Common Stock.

Except as expressly provided in our Certificate of Incorporation, shares of Class C Capital Stock have the same rights and privileges and rank equally, share ratably and are identical in all respects to the shares of Class A Common Stock and Class B Common Stock as to all matters. In the event of any merger, consolidation, or other business combination requiring the approval of our stockholders entitled to vote thereon (whether or not we are the surviving entity), the holders of shares of Class C Capital Stock shall receive the same amount and form of consideration on a per share basis as the consideration, if any, received by holders of shares of Class A Common Stock in connection with such merger, consolidation or combination. In the event of any (1) tender or exchange offer to acquire any shares of Class A Common Stock or Class B Common Stock by any third party pursuant to an agreement to which we are a party, or (2) any tender or exchange offer by us to acquire any shares of Class A Common Stock or Class B Common Stock, the holders of shares of Class C Capital Stock shall receive the same amount and form of consideration on a per share basis as the consideration received by holders of shares of Class A Common Stock (and if holders of shares of Class A Common Stock are entitled to make an election as to the amount or form of consideration that such holders shall receive in any such tender or exchange offer with respect to their shares of Class A Common Stock, then the holders of shares of Class C Capital Stock shall be entitled to make the same election as to their shares of Class C Capital Stock).

Class C Settlement Agreement

In connection with the adjustment of Google's capital structure by establishing the Google Class C Capital Stock, and the dividend of one share of Google Class C Capital Stock for each share of Google Class A Common Stock and Google Class B Common Stock outstanding on March 27, 2014 (the "Class C dividend"), on October 28, 2013, the Delaware Court of Chancery entered into a settlement agreement with Google, the Board of Directors of Google and the plaintiffs in the class action litigation involving the authorization to distribute Google Class C Capital Stock captioned *In Re: Google Inc. Class C Shareholder Litigation*, Civil Action No. 7469-CS. The parties subsequently filed a Revised Stipulation of Compromise and Settlement with the Court, which issued an Order and Final Judgment on November 6, 2013 that fully approved the parties' settlement agreement (the "Google Class C Settlement"). Additionally, on October 2, 2014, we entered into a Class C Undertaking pertaining to the Google Class C Settlement, pursuant to which Alphabet will undertake, with respect to the Alphabet securities, to be bound by the terms of the Google Class C Settlement.

restrictions, undertakings and all continuing obligations and to benefit from the rights of the Google Class C Settlement Agreement that are applicable to Google as if Alphabet were (the “Class C Undertaking”).

The terms of the Class C Undertaking require us to: (i) ensure that the Transfer Restriction Agreements (defined below) entered into by Larry, our Co-Founder and director; Sergey, our Founder and director; and Eric E. Schmidt, our significant stockholder; and certain of their respective affiliates cannot be waived or amended unless such amendment or waiver is first considered and recommended by a committee of two or more of the independent directors of our Board of Directors who do not hold Class B Common Stock, and then approved by a majority of our Board of Directors, excluding Larry and Sergey; (ii) ensure that any waiver or amendment of the Transfer Restriction Agreements will be publicly disclosed at least 30 days before such waiver or amendment takes effect on a Form 8-K, Form 10-Q or Form 10-K; (iii) effective for three years from the Class C dividend payment date, prior to issuing more than 10 million shares of Class C Capital Stock as consideration in an acquisition or other business combination (excluding assumptions or conversions of equity for employees of acquired or combined companies), have our independent directors consider the effects of issuing such shares on our holders of Class A Common Stock and upon the company as a whole; and when the aggregate voting power of Larry and Sergey falls below 15% of the cumulative voting power of all our shareholders, have our Board of Directors consider in good faith whether it is no longer in our best interests to maintain a class of nonvoting stock and, if it so determines, take steps to cause the Class C Capital Stock to convert into Class A Common Stock.

Transfer Restriction Agreements

On October 2, 2015, we entered into a transfer restriction agreement with each of Larry, Sergey, Eric and certain of their respective affiliates (collectively, the “Transfer Restriction Agreements”). On December 31, 2021, we entered

into a joinder to Sergey's transfer restriction agreement with certain of his other affiliates. The Transfer Restriction Agreements are intended to limit the ability of Larry, Sergey, and Eric to sell their Alphabet stock in a manner that does not reduce their voting power. Under the Transfer Restriction Agreements, the parties are bound, without any modification, by the same restrictions, undertakings and obligations that are imposed under the transfer restriction agreements, related joinders and other documentation entered into with Google on March 1, 2014 in connection with the Google Class C Settlement (the “Google Transfer Restriction Agreements”).

Pursuant to the Transfer Restriction Agreements, none of Larry, Sergey, Eric, or certain of their respective affiliates that are party to the agreements (generally, trusts and other estate planning vehicles through which Larry, Sergey, and Eric hold all or a portion of their shares of Class A Common Stock, Class B Common Stock or Class C Capital Stock) may sell, assign, transfer, convey or hypothecate any shares of Class C Capital Stock if, as a result of such sale, transfer, conveyance or hypothecation, they, together with certain of their respective affiliates, would own more shares of Class B Common Stock than shares of Class C Capital Stock. If at any time either Larry, Sergey, or Eric, in each case together with certain of his respective affiliates, owns more shares of Class B Common Stock than shares of Class C Capital Stock, then Larry, Sergey, or Eric, as the case may be, and his respective affiliates, will be deemed to have automatically converted that number of shares of Class B Common Stock into shares of Class A Common Stock such that after such conversion he and his affiliates own an equal number of shares of Class B Common Stock as he and his affiliates own of shares of Class C Capital Stock. The required maximum ratio of shares of Class B Common Stock to shares of Class C Capital Stock owned by Larry, Sergey and Eric is subject to adjustment in connection with certain dividends, stock splits, distributions or recapitalizations.

Larry, Sergey, Eric, and certain of their respective affiliates that are party to the Transfer Restriction Agreements may transfer shares of Class B Common Stock to their affiliates as permitted by the terms of our Certificate of Incorporation only if, immediately following such transfer, Larry, Sergey, or Eric, as the case may be, and his respective affiliates, would own an aggregate number of shares of Class B Common Stock equal to or less than the number of shares of Class C Capital Stock that he and his affiliates own. Additionally, Larry, Sergey, Eric, and certain of their respective affiliates that are party to the Transfer Restriction Agreements may transfer shares of Class C Capital Stock to their affiliates only if, immediately following such transfer, Larry, Sergey, or Eric, as the case may be, and his respective affiliates, would own an aggregate number of shares of Class B Common Stock equal to or less than the number of shares of Class C Capital Stock that he and his affiliates own. However, each of Larry and his affiliates that are party to his Transfer Restriction Agreement and Sergey and his affiliates that are party to his Transfer Restriction Agreement may not transfer shares of Class B Common Stock to another person in a transfer that does not result in the automatic conversion of such shares of Class B Common Stock into Class A Common Stock pursuant to the terms of the Certificate of Incorporation unless Larry or Sergey, as the case may be, and his respective affiliates, in the same manner and to the same extent, convert an equal number of shares of Class C Capital Stock to the transferee.

In the event of (1) any merger, consolidation, or other business combination requiring the approval of the holders of our capital stock (whether or not Alphabet is the surviving entity), (2) the acquisition of all or substantially all of our assets, (3) any tender or exchange offer by any third party to acquire a majority of the shares of Class A Common Stock, Class B Common Stock or Class C Capital Stock, or (4) any tender or exchange offer by us to acquire any shares of Class A Common Stock, Class B Common Stock, or Class C Capital Stock, none of Larry, Sergey, Eric, and certain of their respective affiliates that are party to the Transfer Restriction Agreements may sell, transfer or exchange, directly or indirectly, any shares of Class A Common Stock, Class B Common Stock, or Class C Capital Stock in connection with such transaction or in a related transaction for (a) with respect to their shares of Class A Common Stock or Class B Common Stock, an amount per share greater than the amount per share that the holders of shares of Class A Common Stock receive in such transaction or a form of consideration different from the form that the holders of shares of Class A Common Stock would receive, or may elect to receive, in such transaction; or (b) with respect to their shares of Class C Capital Stock, an amount per share greater than the amount per share that the holders of shares of Class C Capital Stock would receive, or may elect to receive, in such transaction.

With respect to Larry, Sergey, and certain of their respective affiliates, the applicable Transfer Restriction Agreements generally terminate when they collectively hold less than 34% of our total outstanding voting power. However, the Founder Equal Treatment Provision never terminates.

With respect to Eric and certain of his affiliates, the applicable Transfer Restriction Agreement generally terminates when they collectively hold less than 2% of our total outstanding voting power. However, the Founder Equal Treatment Provision never terminates.

As required under the terms of the Class C Settlement Agreement, the Transfer Restriction Agreements may only be amended or waived if such amendment or waiver is (i) first considered and recommended by a committee of two or more independent directors of our Board of Directors who do not hold Class B Common Stock and (ii) then approved by every member of our Board of Directors, excluding Larry and Sergey. Any Transfer Restriction Agreement amendment or waiver will be publicly disclosed by Alphabet on a Form 8-K, Form 10-Q or Form 10-K at least 30 days before such amendment or waiver takes effect.

Preferred Stock

We are authorized to issue, without approval by our stockholders, up to a total of 100,000,000 shares of preferred stock in one or more series. Our Board of Directors may establish the number of shares to be included in each such series and may fix the designations, preferences, powers, and other rights, and any qualifications, limitations or restrictions of the shares of preferred stock. Our Board of Directors could authorize the issuance of preferred stock with voting or conversion rights that could dilute the voting power or rights of the holders of Class A Common Stock, Class B Common Stock and Class C Capital Stock. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, have the effect of delaying, deferring or preventing a change in control of Alphabet and might harm the market price of our Class A Common Stock or Class C Capital Stock.

The particular terms of any series of preferred stock offered by us may include:

- the number of shares of the preferred stock being offered;
- the title and liquidation preference per share of the preferred stock;
- the purchase price of the preferred stock;
- the dividend rate or method for determining the dividend rate;
- the dates on which dividends will be paid;
- whether dividends on the preferred stock will be cumulative or noncumulative and, if cumulative, the dates from which dividends shall commence to accumulate;
- any redemption or sinking fund provisions applicable to the preferred stock;
- any securities exchange on which the preferred stock may be listed; and
- any additional dividend, liquidation, redemption, sinking fund and other rights and restrictions applicable to the preferred stock.

Holders of preferred stock will be entitled to receive, when, as and if declared by our Board of Directors, cash dividends at the rates and on the dates established by such series of preferred stock. Dividend rates may be fixed or variable or both. Different series of preferred stock may be entitled to dividends at different dividend rates or based upon different methods of determination. Each dividend will be payable to the holders of record as they appear on our stock books on record dates determined by our Board of Directors. Dividends on preferred stock may be cumulative or noncumulative. If our Board of Directors fails to declare a dividend on any preferred stock for which dividends are noncumulative, then the right to receive that dividend will be lost, and we will have no obligation to pay the dividend for that dividend period, whether or not dividends are declared for any future dividend period.

Any series of preferred stock may be redeemable in whole or in part at our option. In addition, any series of preferred stock may be subject to mandatory redemption pursuant to a sinking fund.

Anti-Takeover Effects of Our Certificate of Incorporation and Bylaws and of Delaware Law

Certain provisions of our Certificate of Incorporation and Bylaws and of the DGCL could have the effect of delaying, deferring, or discouraging another party from acquiring control of our company. In particular, our capital structure concentrates ownership of our voting stock in the hands of Larry, Sergey, and Eric. These provisions, which are summarized below, are expected to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with our Board of Directors. However, these provisions could also have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit term fluctuations in the market price of our Class A Common Stock or Class C Capital Stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders may otherwise desire to be in their best interests.

Three Classes of Stock

As discussed above, our Class B Common Stock has 10 votes per share, while our Class A Common Stock has one vote per share and our Class C Capital Stock has no voting rights (unless otherwise required by law). As a result of their ownership of a substantial portion of our Class B Common Stock, Larry and Sergey currently have the ability to elect all of our directors and determine the outcome of most matters submitted for a vote of our stockholders. This concentrated voting control could discourage others from initiating any potential merger, takeover or other change of control transaction that other stockholders may view as beneficial.

Because the Class C Capital Stock has no voting rights (except as required by law), the issuance of Class C Capital Stock will not result in voting dilution to the holders of shares of Class A Common Stock or Class B Common Stock. As a result, the issuance of Class C Capital Stock could prolong the duration of Larry and Sergey's current relative ownership of our voting stock and their ability to elect all of our directors and to determine the outcome of most matters submitted to a vote of our stockholders.

So long as Larry and Sergey have the ability to determine the outcome of most matters submitted to a vote of our stockholders, third parties may be deterred in their willingness to enter into an unsolicited merger, takeover, or other change of control proposal, or to engage in a proxy contest for the election of directors. As a result, our three classes of stock may have the effect of depriving our stockholders of an opportunity to sell their shares at a premium over prevailing market prices and make it more difficult to replace our directors and management.

Special Approval for Change in Control Transactions

In the event a person seeks to acquire us by means of a merger or consolidation transaction, a purchase of all or substantially all of our assets, or an issuance of our voting securities representing more than 2% of our outstanding shares at the time of issuance and that results in any person or group owning more than 50% of our outstanding voting power, then such types of acquisition transactions must be approved by our stockholders at an annual or special meeting. At this meeting, we must obtain the approval of stockholders representing a greater of:

- a majority of the voting power of our outstanding capital stock; and
- 60% of the voting power of the shares of capital stock present in person or represented by proxy at the stockholder meeting and entitled to vote.

Limits on Ability of Stockholders to Act by Written Consent

We have provided in our Certificate of Incorporation and Bylaws that our stockholders may not act by written consent. This limit on the ability of our stockholders to act by written consent may lengthen the amount of time required to take stockholder actions. As a result, no stockholder, regardless of how large its holdings of our stock are, would be able to amend our

or remove directors without holding a stockholders meeting.

Undesignated Preferred Stock

The ability to authorize undesignated preferred stock makes it possible for our Board of Directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to acquire us. These and other provisions may have the effect of deferring or preventing hostile takeovers or delaying or preventing changes in control or management of our company.

Requirements for Advance Notification of Stockholder Nominations and Proposals

Our Bylaws establish advance notice procedures with respect to stockholder proposals and the nomination of candidates for election as directors, other than nominations made by the direction of our Board of Directors or a committee of our Board of Directors. The Bylaws do not give our Board of Directors the power to approve or disapprove stockholder nominations of candidates or proposals regarding business to be conducted at a special or annual meeting of the stockholders. However, our Bylaws may have the effect of precluding conduct of certain business at a meeting if the proper procedures are not followed. These provisions may also discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of our company.

Delaware Anti-Takeover Statute

We are subject to Section 203 of the DGCL regulating corporate takeovers. In general, Section 203 prohibits a publicly-held Delaware corporation from engaging, under certain circumstances, in a business combination with an interested stockholder for a period of three years following the date the person became an interested stockholder unless:

- prior to the date of the transaction, the Board of Directors of the corporation approved either the business combination or the transaction which results in the stockholder becoming an interested stockholder;
- upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the number of shares outstanding (1) shares owned by persons who are directors and also officers and (2) shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- on or subsequent to the date of the transaction, the business combination is approved by the Board of Directors and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock which is not owned by the interested stockholder.

Generally, a business combination includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. An interested stockholder is a person who owns 15% or more of a corporation's outstanding voting securities, or is an affiliate or associate of the corporation and within three years prior to the determination of interested stockholder status did own 15% or more of a corporation's outstanding voting securities, and affiliates and associates of such person. The existence of this provision may have an anti-takeover effect with respect to transactions our Board of Directors does not approve in advance. Section 203 may also discourage attempts that might result in a premium market price for the shares of capital stock held by stockholders.

Listing

Our Class C Capital Stock and Class A Common Stock are listed on The NASDAQ Global Select Market under the symbols "GOOG" and "GOOGL" respectively. Our Class B Common Stock is not listed on any stock market or exchange.

ALPHABET INC. 2021 STOCK PLAN ALPHABET PERFORMANCE STOCK UNIT AGREEMENT

This Alphabet Performance Stock Unit Agreement (this "**Agreement**") is entered into as of [] (the "**Grant Date**") by and between [PARTICIPANT NAME] (the "**Participant**") and Alphabet Inc., a Delaware corporation ("Alphabet", and together with its Subsidiaries, the "Company").

I. GRANTS

Pursuant to the Alphabet Inc. 2021 Stock Plan (the "**Plan**"), Alphabet hereby awards grants of performance stock units ("**PSUs**," and each grant of PSUs, a "**Grant**") with Target Awards and Performance Periods as set forth in the table below.

Target Award	Performance Period
XXXX PSUs	XXXXXXX

Each PSU represents the right to receive one share of Capital Stock, subject to the terms and conditions of the Plan and this Agreement. The number of PSUs earned under each Grant may be equal to, greater than or less than its Target Award (including zero). Capitalized terms used but not otherwise defined in this Agreement shall have the meanings given to such terms in the Plan.

II. TERMS OF PSUs

1. Vesting of PSUs.

(a) In General. Except as otherwise provided in subsections (b) and (c) below, the number of PSUs (if any) earned by the Participant under each Grant based on Alphabet's performance against the Performance Goals (as defined in Exhibit A) during the applicable Performance Period as determined by the Committee in accordance with Exhibit A (each, a "**Final Award**") will vest on the Determination Date (as defined in Exhibit A) for such Grant, subject to the Participant's continued employment with, or service to, the Company through such date, and be settled in accordance with Section II.2 below, and any unvested PSUs will be forfeited as of the Determination Date and the Participant will have no further rights to such unvested PSUs. In the event the Participant ceases to be employed by, or ceases to provide services to, the Company prior to the Determination Date for a Grant for any reason other than (i) death (as set forth in subsection (b) below) or (ii) termination by the Company without Cause (as set forth in subsection (c) below), all of the then outstanding and unvested PSUs granted under this Agreement will be forfeited effective as of the date that the Participant ceases to be employed by, or ceases to provide services to, the Company (the "**Termination Date**") and the Participant will have no further rights to such unvested PSUs. Prior to any actual delivery of shares of Capital Stock pursuant to the PSUs, they represent an unfunded, unsecured obligation of the Company, payable (if at all) only from the general assets of the Company.

(b) Death of the Participant. In the event that the Participant ceases to be employed by, or ceases to provide services to, the Company as a result of the Participant's death (i)(x) prior to the start of the Performance Period of a Grant or during the Performance Period

of a Grant, then the Target Award in respect of such Grant shall immediately vest as of the Termination Date or (y) following the end of the Performance Period of a Grant but prior to its Determination Date, then the Final Award (as determined by the Committee in accordance with Exhibit A) in respect of such Grant shall immediately vest as of such Determination Date and (ii) any delivery of shares of Capital Stock to be made to the Participant under this Agreement will be made, subject to satisfaction of all applicable Tax-Related Items, as described in Section II.4 below to the Participant's designated beneficiary; provided, that, such beneficiary has been designated prior to the Participant's death; in the absence of such effective designation, the shares will be delivered to the administrator or executor of the Participant's estate. Any such administrator or executor must furnish Alphabet with (A) written notice of his or her status as transferee, (B) a copy of the will and/or such evidence as the Committee may deem necessary to establish the validity of the transfer, and (C) an agreement by the transferee to comply with all the terms and conditions of PSUs that are or would be applicable to the Participant and to be bound by the acknowledgments made by the Participant hereunder. Delivery of the shares of Capital Stock in respect of PSUs vesting pursuant to this Section II.1(b) will be made as soon as practicable following the Termination Date or the Determination Date, as applicable, but in no event later than forty-five (45) days following such date and the Company will have no further obligations under this Agreement.

(c) Termination of the Participant without Cause. In the event that the Participant ceases to be employed by, or ceases to provide services to, the Company as a result of the Company's termination of the Participant's employment or services without Cause prior to the Determination Date for a Grant, then the number of PSUs (if any) calculated by multiplying the Final Award (as determined by the Committee in accordance with Exhibit A) in respect of such Grant by a fraction, the numerator of which is the number of calendar days during the Performance Period during which the Participant was employed by, or providing services to, the Company and the denominator of which is the aggregate number of calendar days in the Performance Period, will vest and be settled in accordance with Section II.2 below and any unvested PSUs will be forfeited as of the Determination Date and the Participant will have no further rights to such unvested PSUs; provided, that if the Termination

occurs prior to the start of the Performance Period of a Grant, all PSUs under the Grant will be immediately forfeited as of the Termination Date and the Participant will have no further rights to such PSUs.

For purposes of this Agreement, “Cause” means any of the following: (i) a willful failure by Participant, in the good faith judgment of the Board, to substantially perform the duties associated and consistent with the scope of the Participant’s position; (ii) the Participant’s refusal to implement or follow a lawful directive from the Board or CEO; (iii) the Participant’s breach of fiduciary duty to the Company; (iv) the Participant’s material breach of any written agreement between the Participant and the Company, including, without limitation, any applicable At-Will Employment, Confidential Information and Invention Assignment Agreement; (v) the Participant’s intentional engagement in conduct that is materially injurious to the Company (economically or reputationally), including but not limited to, misappropriation of trade secrets or any other tangible or intangible property of the Company, fraud or embezzlement, but excluding any conduct by Participant that is consistent with or pursuant to a lawful directive of the Board or CEO; (vi) the Participant’s material violation of a material provision of the Code of Conduct or any policy of Alphabet, Google LLC or any other affiliate of Alphabet that is applicable to the Participant (e.g., policy against sexual harassment, Alphabet’s Policy Against Insider Trading (the “Trading Policy”), etc.); (vii) the Participant’s material violation of any federal or state law or regulation applicable to the business of the Company; (viii) the Participant’s violation of any securities laws, rules or regulations, or the rules and regulations of any securities exchange or association of which the Company is a member, failure to cooperate with the Company in any investigation or formal proceeding or being found liable in a Securities

and Exchange Commission enforcement action or otherwise being disqualified from serving in the Participant’s position; (ix) the Participant’s engaging in gross misconduct; (x) a substantiated finding by the Company (or its delegate) of sexual harassment, sexual misconduct or retaliation; (xi) the Participant being under investigation for sexual harassment, sexual misconduct or retaliation; or (xii) the Participant’s commission of a felony under the laws of the United States or any state thereof or any comparably-classified crime under the laws of a non-US jurisdiction or a serious crime involving moral turpitude. Notwithstanding the foregoing, termination of the Participant’s employment or service under (i), (ii), (iv) or (vi) (only) above will not be for “Cause” unless the Company determines in its sole discretion that the conduct alleged to constitute “Cause” is susceptible of cure or remedy; and, if so, the Participant: (a) is provided with written notice setting forth with specificity the conduct alleged to constitute “Cause,” (b) is provided not less than 30 days following such notice (the “Cure Period”) to cure or remedy such conduct prior to the effective date of the Participant’s termination of employment or services, during which period the Participant shall be provided the opportunity to address the Board with respect to such conduct (with the assistance of legal counsel, if requested) and (c) fails to cure or remedy such conduct during the Cure Period.

2. Settlement of PSUs. Settlement of vested PSUs in respect of a Grant shall occur as soon as practicable following the applicable Determination Date, but in no event later than forty-five (45) days following such Determination Date, and the Company shall have no further obligations under such Grant. Alphabet will settle vested PSUs by issuing (either in book-entry form or otherwise) to the Participant (or the Participant’s beneficiary or estate, in the event of the Participant’s death), one share of Capital Stock for each vested PSU, subject to satisfaction of all applicable Tax-Related Items, as described in Section II.4 below.

3. Adjustment Upon Certain Changes. In the event of any transaction or other event described in Section 9 of the Plan, each Grant shall be treated the same way as all other restricted stock units issued under the Plan held by the executive officers of Alphabet in office at the time of such event; provided, that in addition to any actions taken by the Committee in respect of such awards pursuant to Sections 9(c) and (d) of the Plan, to the extent determined by the Committee to be necessary and appropriate in its sole discretion, the number of PSUs subject to each Grant shall be fixed at its Target Award.

4. Taxes.

(a) Liability for Tax-Related Items. The Participant acknowledges that the Participant is ultimately liable and responsible for an individual’s share of all income taxes (including federal, state and local income taxes), payroll taxes and other tax-related withholding (the “Tax-Related Items”) arising in connection with PSUs, regardless of any action the Company takes with respect to such Tax-Related Items. The Participant further acknowledges that the Company (i) does not make any representation or undertaking regarding the treatment of any Tax-Related Items in connection with any aspect of PSUs, including the grant, vesting and settlement of PSUs under any Grant, or the subsequent sale of shares of Capital Stock acquired upon settlement of any PSUs and (ii) does not commit, and is under no obligation, to structure the terms of PSUs or any aspect of PSUs under any Grant to reduce or eliminate the Participant’s liability for Tax-Related Items or achieve any particular tax result.

(b) Payment of Withholding Taxes. Alphabet shall, pursuant to such procedures as the Committee may specify from time to time, withhold a number of shares of Capital Stock otherwise issuable upon settlement of any vested PSUs having an aggregate Fair Market Value sufficient to satisfy the federal, state and local withholding tax requirements attributable to vested PSUs but not greater than the withholding obligations, as determined by the

Committee in its discretion; provided, that, the Committee hereby reserves the discretion to amend this Agreement by notice to the Participant without obtaining the Participant's consent, to allow the Committee to use any one or more methods permitted by the Plan to satisfy the federal and local withholding tax requirements attributable to the PSUs being settled.

5. Rights as Stockholder. Neither the Participant nor any person claiming under or through the Participant will have any of the rights or privileges of a stockholder of Alphabet in respect of any shares of Capital Stock deliverable pursuant to PSUs unless and until such shares of Capital Stock have been issued on the records of Alphabet or its transfer agents or registrars. After such issuance, the Participant will have all the rights of a stockholder of Alphabet with respect to such shares of Capital Stock.

Notwithstanding the foregoing, in the event that any dividend or other distribution is declared and paid on shares of Capital Stock after the Grant Date, but prior to the complete settlement, cancellation or forfeiture of any PSUs under a Grant, the Participant shall be entitled to receive upon settlement of any Grant, an amount equal to the dividends or other distributions that would have been paid or issued on the number of shares of Capital Stock actually vested and issuable to Participant pursuant to such Grant had they been outstanding during such period, as calculated by the Committee in its discretion. Such dividend equivalent amount will be settled with the Participant, upon settlement of the Award, in the same form, and in the same amount, as the actual dividend or distribution was paid to the holders of the Capital Stock.

6. No Special Employment Rights; No Right to Future Awards. Nothing contained in this Agreement shall confer upon the Participant any special right with respect to the continuation of the Participant's employment by, or service to, the Company or interfere in any way with the right of the Company at any time to terminate such employment or service or to increase or decrease the compensation of the Participant from the rate in effect at the Grant Date. The award of the Grants is at the sole discretion of Alphabet and does not create any contractual or other right to receive future grants of PSUs, or benefits in lieu of PSUs, even if PSUs have been awarded to the Participant repeatedly in the past.

7. PSUs Not Transferable. Except to the limited extent provided in Section II.1(b) above, PSUs and the rights and privileges conferred under the Grants awarded hereby may not be transferred, assigned, pledged or hypothecated in any way by the Participant (whether by operation of law or otherwise) and may not be subject to sale under execution, attachment or similar process. Any attempt by the Participant to transfer, assign, pledge, hypothecate or otherwise transfer PSUs, or any right or privilege conferred under the Grants awarded hereby, and any attempt to sell or dispose of PSUs under any execution, attachment or similar process, shall be void and unenforceable against the Company.

Notwithstanding the immediately preceding paragraph, and subject to the terms and conditions of this paragraph, the Participant may, with the Company's express written consent, transfer all or a portion of any unvested Grants (but only a whole number of PSUs subject to any Grant) into one or more trusts for the purposes of estate planning (the "**Trust**"). Any Trust must: (a) be subject to any and all terms and conditions of the Plan and this Agreement, including, but not limited to, Section II.1 of this Agreement; (b) be described in General Instruction A.1(a)(5) of Form 1041; (c) not provide Participant with any consideration in connection with a transfer permitted under this paragraph; and (d) if requested by the Company, comply with the Trading Policy (as it may be amended from time to time). The Participant acknowledges and agrees that the Company has not made, and does not make in connection with the Grants made under this Agreement, any representations under any applicable law, including but not limited to, federal or state tax, securities, property, probate or other estate laws, and that

the Participant is solely responsible for compliance with all such applicable laws, with respect to any Grants or PSUs transferred into a Trust as permitted under this paragraph.

8. Modification; Entire Agreement; Waiver. No modification of any provision of this Agreement which reduces the Participant's rights hereunder will be valid unless the same is agreed to in writing by the parties hereto. This Agreement, including Exhibit A, together with the Plan, represent the entire agreement between the parties with respect to the PSUs awarded by the Grants hereunder. The failure of Alphabet to enforce at any time any provision of this Agreement will in no way be construed to be a waiver of such provision or of any other provision hereof. Alphabet reserves the right, however, to the extent Alphabet deems necessary or advisable in its sole discretion, to unilaterally alter or modify the terms of the Grants awarded under this Agreement in order to ensure that PSUs either qualify for exemption from, or comply with, the requirements of Section 409A of the Internal Revenue Code of 1986, as amended, and the regulations promulgated thereunder ("**Section 409A**"); provided, however that the Company makes no representations that PSUs will be exempt from, or will comply with, the requirements of Section 409A.

9. Binding Agreement. Subject to the limitation on the transferability of PSUs contained herein, this Agreement will be binding upon and inure to the benefit of the heirs, legatees, legal representatives, successors and assigns of the parties hereto.

10. Additional Conditions to Issuance of Shares of Capital Stock. Alphabet shall not be required to issue any shares of Capital Stock hereunder prior to fulfillment of all of the following conditions: (a) the completion of any registration or other qualification of such shares of Capital Stock under any federal or state law or under the rulings or regulations of the Securities and Exchange Commission or any other government regulatory body, or under any stock exchange on which the shares of Capital Stock are listed for trading, which the Committee shall, in its absolute discretion, deem necessary or advisable; (b) the obtaining of any approval or other clearance from any federal or state governmental agency, which the Committee shall, in its absolute discretion, determine to be necessary or advisable; and (c) the lapse of such reasonable period of time as

exceed forty-five (45) days following a Determination Date as the Committee may establish from time to time for reasons of administrative convenience.

11. Plan Governs. This Agreement is subject in all respects to all terms and provisions of the Plan and the Plan document is hereby incorporated into this Agreement. In the event of a conflict between one or more provisions of this Agreement and one or more provisions of Plan, the provisions of the Plan will control.

12. Policy Against Insider Trading; Recoupment.

(a) By accepting the Grants, the Participant acknowledges that (i) a copy of the Trading Policy has been made available to the Participant, (ii) the Participant has had an opportunity to review the Trading Policy and (iii) the Participant is bound by all the terms and conditions of the Trading Policy.

(b) By accepting the Grants, the Participant agrees that (i) incentive-based compensation paid to the Participant pursuant to this Agreement may be subject to recoupment or clawback to the extent permitted or required by applicable law (A) in the event of a restatement of financial statements due to material noncompliance with any financial reporting requirement as a result of misconduct by any person or (B) as may be required by any applicable listing standards of a national securities exchange adopted in accordance with Section 954 of the Dodd-Frank Wall Street Reform and Consumer Protection Act and any implementing rules and

regulations of the U.S. Securities and Exchange Commission adopted thereunder, and (ii) by accepting the Grants pursuant to the Plan and this Agreement, Participant authorizes such clawback and agrees to comply with any Company request or demand for such recoupment.

13. Committee Authority. The Committee has full discretionary authority to administer the Plan, including discretionary authority to interpret and construe any and all provisions of the Plan and this Agreement and to adopt and amend from time to time such rules and regulations for the administration of the Plan as the Committee may deem necessary or appropriate. All actions taken and all interpretations and determinations made by the Committee will be final and binding upon the Participant, the Company and all other interested persons.

14. Captions. Captions provided herein are for convenience only and shall not affect the scope, meaning, intent or interpretation of provisions of this Agreement.

15. Severability. In the event that any provision in this Agreement is held to be invalid or unenforceable for any reason, such provision shall be severable from, and such invalidity or unenforceability will not be construed to have any effect on, the remaining provisions of this Agreement.

16. Governing Law. This Agreement shall be construed and administered in accordance with the laws of the State of California without regard to its conflict of law principles.

17. Section 409A Compliance. It is intended that the Plan and the Agreement comply with, or be exempt from, the requirements of Section 409A and any related guidance promulgated with respect to such Section by the U.S. Department of the Treasury or the Internal Revenue Service. Accordingly, to the maximum extent permitted, this Agreement shall be interpreted and administered to be in compliance therewith or exempt therefrom. Notwithstanding anything contained herein to the contrary, to the extent required in order to avoid accelerated taxation and/or tax penalties under Section 409A, the Participant shall not be considered to have terminated employment with, or service to, the Company for purposes of this Agreement until the Participant would be considered to have incurred a "separation from service" from the Company within the meaning of Section 409A. Each amount to be paid or benefit to be provided pursuant to this Agreement shall be construed as a separate identifiable payment for purposes of Section 409A.

18. Employee Data Privacy.

(a) The Participant hereby explicitly and unambiguously consents to the collection, use and transfer, in electronic or other form, of the Participant's personal data as described in this Agreement by and among, as applicable, the Company and its Subsidiaries and affiliates for the exclusive purpose of implementing, administering and managing the Participant's participation in the Plan.

(b) The Participant understands that the Company may hold certain personal information about him, including, but not limited to, the Participant's name, home address and telephone number, date of birth, social insurance number or other identification number, salary, nationality, job title, any shares of Capital Stock or directorships held in the Company, details of all entitlement to shares of Capital Stock awarded, exercised, vested, unvested or outstanding in Participant's favor, for the purpose of implementing, administering and managing the Plan ("Data").

(c) The Participant understands that Data will be transferred to Charles Schwab & Co., Inc., Morgan Stanley Smith Barney LLC, and/or such other third parties as may be selected by the Company in the future to assist the Company with the implementation, administration and management of the Plan, that these recipients may be located in the Participant's country or elsewhere, and that the recipient's country may have different data privacy laws and protections than the Participant's country. The Participant understands that he or she may request a list of the names and addresses of any potential recipients of the Data by contacting the Participant's local human resources representative.

(d) The Participant authorizes the Company, Charles Schwab & Co., Inc., Morgan Stanley Smith Barney LLC, and any other possible recipients which may assist the Company (presently or in the future) with implementing, administering and managing the Plan to receive, possess, use, retain and transfer the Data, in electronic or other form, for the sole purpose of implementing, administering and managing the Participant's participation in the Plan, including any requisite transfer of such Data as may be required to a broker or other third party with whom the Participant may elect to deposit any shares of Capital Stock acquired upon settlement of the PSUs. The Participant understands that Data will be held only as long as is necessary to implement, administer and manage the Participant's participation in the Plan. The Participant understands that the Participant may, at any time, view Data, request additional information about the storage and processing of Data, require any necessary amendments to Data or refuse or withdraw the consents herein, in any case without cost, by contacting in writing the Participant's local human resources representative. The Participant understands, however, that refusing or withdrawing consent may affect the Participant's ability to participate in the Plan. For more information on the consequences of the refusal to consent or withdrawal of consent, the Participant understands that he or she may contact the Participant's local human resources representative.

19. **Acceptance.** The Participant must accept the Grants and agree to the terms and conditions of the Grants as set forth in the Plan and this Agreement (including Exhibit A), by electronically accepting this Agreement immediately following the Grant Date.

EXHIBIT A

A. **Performance Goals.** The number of PSUs that may be earned under each Grant will be determined based on Alphabet's achievement of Threshold, Target or Maximum levels ("**Performance Goals**") of cumulative total shareholder return ("**TSR**") vs. the respective TSRs of the constituent companies in the S&P 100 Index (the "**S&P 100 Index Companies**") (the "**TSR Performance**") over the Performance Period in respect of such Grant. The terms "Threshold," "Target" and "Maximum," when used in this Exhibit A to describe Alphabet's TSR Performance, are defined below:

Performance Goals	Alphabet's Percentile Rank Relative to Peer Companies	Percentage of Target Award Earned (straight-line interpolation between Threshold and Target; and Target and Maximum)
Minimum	Below 25th percentile	0%
Threshold	At 25th percentile	50%
Target	At 50th percentile	100%
Maximum	At or above 75th percentile	200%

TSR Performance for Alphabet and for the S&P 100 Index Companies (each, a "**Peer Company**") shall be calculated as follows:

$$\frac{(\text{Ending Average Share Price} - \text{Starting Average Share Price}) + \text{Dividends Reinvested}}{\text{Starting Average Share Price}}$$

Where:

Starting Average Share Price for both Alphabet and the Peer Companies is equal to the average closing price for each trading day in the calendar day period ending on the calendar day immediately preceding the first day of the Performance Period (inclusive of such calendar day).

Ending Average Share Price for both Alphabet and the Peer Companies is equal to the average closing price for each trading day in the calendar day period ending on the last calendar day of the Performance Period (inclusive of such last calendar day).

The Peer Companies are those companies (other than Alphabet) comprising the S&P 100 Index on the Grant Date adjusted as follows for the event of certain corporate events in connection with the Peer Companies:

Merger with Company in Peer Group	In the event of a merger, acquisition or business combination transaction of a Peer Company with by another Peer Company, the surviving entity shall remain a Peer Company
Merger with Company not in Peer Group where Peer Company survives	In the event of a merger of a Peer Company with an entity that is not a Peer Company, or the acquisition or business combination transaction of a Peer Company by an entity that is not a Peer Company, in case where the Peer Company is the surviving entity and remains publicly traded, the surviving entity shall remain a Peer Company
Merger with Company not in Peer Group where Peer Company is not the survivor/Peer Company taken private	In the event of a merger or acquisition or business combination transaction of a Peer Company by with an entity that is not a Peer Company or a "going private" transaction involving a Peer Company where the Peer Company is not the surviving entity or is otherwise no longer publicly traded, the company shall no longer be a Peer Company
Bankruptcy, Liquidation or Delisting	In the event of a bankruptcy, liquidation or delisting of a Peer Company at any time during the Performance Period, such company shall remain a Peer Company and be assigned a TSR of -100%. Delisting shall mean that a company ceases to be publicly traded on a national securities exchange as a result of any involuntary failure to meet the listing requirements of such national securities exchange but shall not include delisting as a result of any voluntary going private or similar transaction.
Spin-off Transaction	In the event of a stock distribution from a Peer Company consisting of the shares of a new publicly-traded company (a "spin-off"), the Peer Company shall remain a Peer Company and the stock distribution shall be treated as a dividend from the Peer Company based on the fair market value of the distribution on the date of such distribution; the performance of the shares of the spun-off company shall not thereafter be tracked for purposes of calculating TSR

Dividends Reinvested for both Alphabet and the Peer Companies shall mean dividends paid with respect to an ex-dividend date that occurs beginning from the date when the Starting Average Share Price is measured through the end of the Performance Period (whether or not the dividend payment date occurs during this period), which shall be deemed to have been reinvested in the underlying Capital Stock common shares, as applicable.

For TSR Performance, should Alphabet fail to achieve at least Threshold, zero percent (0%) of the Target Award shall be earned. Should Alphabet achieve (a) Threshold, fifty percent (50%) of the Target Award shall be earned, (b) Target, one hundred percent (100%) of the Target Award shall be earned, or (c) Maximum (or greater), two hundred percent (200%) of the Target Award shall be earned. Should Alphabet achieve a TSR Performance level that falls between Threshold and Target or between Target and Maximum, the percentage of the Target Award that shall be earned will be based upon straight-line interpolation between such Performance Goals, rounded up to the nearest whole share of Capital Stock.

B. Determination and Approval of Final Award. Within forty-five (45) days following the last day of the Performance Period, the Committee shall determine achievement in respect of the Performance Goals (the date of such determination, the "**Determination Date**") and shall calculate and approve the Final Award in respect of such Grant. Any PSUs that are determined not to be earned by the Committee under such Grant will be forfeited as of the Determination Date and the Participant will have no further rights to such PSUs.

The Committee, in its sole discretion, shall make all determinations regarding the Performance Goals, including, but not limited to, the extent of achievement, and any adjustments to the calculation of TSR of Alphabet or the Peer Companies, as necessary or appropriate. Determinations made by the Committee will be final and binding on all parties and will be given the maximum discretion permitted by law.

ALPHABET INC. COMPANY BONUS PLAN

1. INTRODUCTION

a. PURPOSE OF THE ALPHABET INC. COMPANY BONUS PLAN

The Alphabet Inc. Company Bonus Plan is intended to reward Participants for their individual and team achievements and allow them to share in rewards for achievements of Alphabet Inc. or any successor thereto and the Participating Affiliates. The Plan should motivate Participants (i) to perform to the best of their abilities, and (ii) to achieve the objectives of Alphabet and the Participating Affiliates. The Plan's goals are to be achieved by providing each Participant with the opportunity to earn Bonus Awards for the achievement of goals relating to the performance of Alphabet and/or Participating Affiliate and the Participant. Participation in the Plan and the payment of any sums hereunder shall be in the sole absolute discretion of Alphabet or the applicable Participating Affiliate.

The Plan is applicable to all Eligible Employees regardless of location. As appropriate, due to local country laws or regulations, certain provisions of the Plan may be modified or adjusted in the Company's discretion to meet local legal requirements.

b. EFFECTIVE DATE

The Plan is effective beginning October 19, 2021 and continuing until it is modified, suspended or terminated in accordance with terms outlined herein.

2. DEFINITIONS

"Affiliate" means any corporation or other entity (including, but not limited to, partnerships and joint ventures) controlled by Alphabet. For purposes of this definition, "control" shall have the meaning given to such term under Rule 405 under the Securities Act of 1933, as amended.

"Alphabet" means Alphabet Inc. or any successor thereto.

"Bonus Award" refers to a cash award made to a Participant under this Plan for the achievement of goals relating to individual performance or the performance of the Company during the applicable Performance Period.

"Bonus Eligible Salary" refers to a proxy value that is used for the calculation of a Participant's Bonus Award. If a Participant is on a Leave of Absence during the Performance Period, his or her Bonus Eligible Salary may be reduced by the Company pro-rata based on the duration of absence from employment as permitted by applicable law.

"Board" means the Board of Directors of Alphabet.

"Committee" means the LDCC in respect of Alphabet and the committee or other persons performing similar functions to the LDCC in respect of a Participating Affiliate, as applicable.

"Company" shall mean either Alphabet or a Participating Affiliate, as applicable, in respect of its Eligible Employees.

"Company Performance" refers to the achievement of the Company based on objective (financial and nonfinancial) or subjective metrics in a Performance Period.

"Disability" means total and permanent disability as defined in the U.S. Department of Treasury Regulation section 1.409A-3(i)(4)(i)(A), provided that the Company in its discretion may determine whether a permanent and total disability exists.

"Eligible Employee" means an employee of the Company who satisfies the eligibility requirements set forth in Section 3.

"Fiscal Year" means the fiscal year of the Company.

"Individual Multiplier" refers to the factor in the Payout Formula relating to a Participant's performance, as determined in the discretion of the Participant's manager, Company management or the Committee, as applicable. A Participant's Performance Score is one factor used to determine the Participant's Individual Multiplier.

"Leave of Absence" refers to a period when an employee is not actively engaged in rendering services pursuant to a Company-approved leave of absence and is measured in days not worked.

"LDCC" refers to the Leadership Development and Compensation Committee of the Board.

"Participant" means as to any Performance Period, an Eligible Employee who has been selected by the Committee for participation in the Plan during that Performance Period.

"Participating Affiliate" means any Affiliate of Alphabet who has opted to pay cash bonuses to its employees pursuant to the Plan and has notified the LDCC.

"Payout Formula" means as to any Performance Period, the formula used to determine the amount of the Bonus Award, if any, to be paid to a Participant. The formula may differ from Participant to Participant.

"Performance Period" refers to the period of time for which a Bonus Award or portion thereof is calculated, as determined by the Committee in its sole discretion.

"Performance Score" is a rating for performance set by a Participant's manager, Company management or the Committee, as applicable, generated based upon achievement of pre-established performance goals over the course of the Performance Period. The individual's performance rating is then calibrated with other relevant peer ratings to determine a Participant's Performance Score. To be eligible for a Performance Score, an employee must be actively engaged in rendering services (i.e., not on a Leave of Absence) for a period defined by the Company in its discretion.

"Plan" means the Alphabet Inc. Company Bonus Plan, as set forth in this instrument and as hereafter amended from time to time.

"Target Award" refers to the product of Target Bonus Percentage and Bonus Eligible Salary.

"Target Bonus Percentage" means, as to any Participant, a percentage determined based on the Participant's role, level and location. Changes to the Target Bonus Percentage are within the Company's sole discretion but any changes will be communicated to the Participant.

"Termination of Employment" means a cessation of the employee-employer relationship between an employee and the Company for any reason, including, but not by way of limitation, a termination by resignation, discharge, death, or the disaffiliation of an Affiliate.

3. ELIGIBILITY REQUIREMENTS

Participation in this Plan is at the sole and absolute discretion of the Company. To be considered for a discretionary Bonus Award hereunder, an employee of the Company must satisfy each of the following eligibility requirements:

(a) The employee must work for the Company as a regular employee in a Plan-eligible position and must be employed as a regular employee on the last day of the Performance Period (unless otherwise determined by the Committee), except where such a service requirement is limited by local laws.

(b) The employee must not be providing services to the Company as a temporary employee, intern or as an independent contractor, consultant, or agent, under a written or oral contract or purchase order, and must not be classified by the Company as a temporary employee, independent contractor, consultant, or agent (whether or not such classification is upheld upon review by a governmental, judicial or other authority or by an arbitrator).

(c) The employee must not participate in the Sales Bonus Plan.

(d) The employee must follow the Company's Code of Conduct as well as other appropriate standards of business conduct.

Without limiting the authority and discretion of Company management or the Committee, as applicable, to determine a Participant's Individual Multiplier and the authority and discretion of the Company under Section 4(a), a Participant's continued satisfaction of the foregoing eligibility requirements throughout the applicable Performance Period is one factor that may be considered by Company management or the Committee, as applicable, in determining the Participant's Individual Multiplier and by the Company in determining whether to eliminate or reduce the Bonus Award payable to the Participant below that which otherwise would be payable under the Payout Formula pursuant to Section 4(a).

4. BONUS AWARD

a. DETERMINATION OF BONUS AWARD

The Company, in its sole discretion, shall establish a Payout Formula for purposes of determining the Bonus Award payable to any Participant. The Payout Formula may include, but is not limited to, the following factors: Bonus Eligible Salary, Individual Multiplier, and Company Performance.

Notwithstanding any contrary provision of the Plan, the Company, in its sole discretion, may (i) eliminate or reduce the Bonus Award payable to any Participant below that which otherwise would be payable under the Payout Formula, including through the exercise of discretion by management or the Committee, as applicable and (ii) increase the Bonus Award payable to any Participant above that which otherwise would be payable under the Payout Formula, including through the exercise of discretion by management or the Committee, as applicable.

b. RIGHT TO RECEIVE PAYMENT

Each Bonus Award that may become payable under the Plan shall be paid solely from the general assets of the Company. Nothing in this section shall be construed to create a trust or to establish or evidence any Participant's claim of any right to payment of a Bonus Award other than as an unsecured general creditor with respect to any payment to which he or she may be entitled. The Company does not make any pre-payments or advances on bonus.

c. TIMING OF PAYMENT

The payment of each Bonus Award shall be made no later than two and one half months following the end of the Fiscal Year in which the applicable Performance Period ends.

d. PAYMENT IN THE EVENT OF DEATH OR DISABILITY

Subject to applicable laws, if, following the end of the Performance Period but before payment of the Bonus Award, a Participant dies or incurs a Disability, then the Bonus Award shall be paid, in the case of death, to his or her estate or his or her beneficiary pursuant to Section 6(e) and in the case of Disability, to the Participant or any other person authorized under applicable law, in each case at the time that Bonus Award would otherwise be paid pursuant to Section 4(c). If a Participant dies or incurs a Disability during the Performance Period, then his or her estate or his or her beneficiary pursuant to Section 6(e) in the case of death, and the Participant or any other person authorized under applicable law in the case of Disability, will receive a pro rata portion of the Target Award (a "Prorated Award"), prorated based on the number of days the Participant worked during the Performance Period. The Prorated Award shall be paid no later than two and one half months following the end of the Fiscal Year in which the Participant's death or Disability occurs.

5. ADMINISTRATION

a. COMMITTEE AS ADMINISTRATOR

The Plan shall be administered by the Committee, or its delegate. The Committee shall consist of not less than two (2) members. The Committee, in its sole discretion and on such terms and conditions as it may provide, may delegate all or part of its authority and powers under the Plan to one or more directors and/or officers of the Company.

b. COMMITTEE AUTHORITY AND POWERS

It shall be the duty of the Committee to administer the Plan in accordance with the Plan's provisions. The Committee shall have all powers and discretion necessary or appropriate to administer the Plan and to control its operation, including, but not limited to, the power to (i) determine which Eligible Employees shall be granted Bonus Awards, (ii) prescribe the terms and conditions of Bonus Awards, (iii) interpret the Plan and the Bonus Awards, (iv) adopt such procedures and subplans as are necessary or appropriate to permit participation in the Plan by Eligible Employees who are foreign nationals or employed outside of the United States, (v) adopt rules for the administration, interpretation and application of the Plan that are consistent therewith, (vi) interpret, amend or revoke any such rules, and (vii) determine the duration of any Performance Period. Any member of the Committee, or any person chosen as delegate by the Committee, shall be liable to any Eligible Employee or Participant for any action, omission, or determination related to the Plan.

6. GENERAL PROVISIONS

a. CHANGES IN THE PLAN

The Board or the LDCC or any delegate of the LDCC, each in its sole discretion with or without notice, may revise, change, amend, suspend or terminate the Plan, or any part thereof, at any time and for any reason during or at the end of any Performance Period; provided that, unless approved by the Committee of a Participating Affiliate, no such actions shall affect the Plan for any Performance Period during which such action takes place in respect of such Participating Affiliate's Participants. For purposes of clarification and without limiting the foregoing, the Committee or the delegate of the Company in its sole discretion may amend or cancel any outstanding Bonus Awards except to the extent prohibited by applicable law.

b. TAX WITHHOLDING

The Company shall withhold all applicable taxes from any Bonus Awards made under the Plan, including any federal, state/provincial and local taxes and mandatory social charges.

c. NO EFFECT ON EMPLOYMENT

Nothing in the Plan shall interfere with or limit in any way the right of the Company to: (i) terminate any Participant's employment or as permitted by applicable law, or (ii) to increase or decrease any Participant's base salary or other compensation. Further, nothing contained herein shall be considered a guarantee of employment for any duration except to the extent required by applicable law or existing contractual obligations.

d. ENTIRE UNDERSTANDING

Except as expressly set forth herein, this Plan, as it may be modified in accordance with the foregoing, constitutes the entire written understanding regarding the subject matter of this Plan and supersedes all prior bonus and incentive plans, whether maintained by Alpha or any Participating Affiliate, and any written, and/or oral agreement, understanding, or representations, in each case regarding the subject matter of this Plan. All Bonus Awards under this Plan are fully discretionary payments. Participation in this Plan during any Performance Period does not convey any entitlement to participate in this or future plans or to the same or similar bonus benefits, nor does this Plan constitute a guarantee to establish an obligation for the Company to maintain a similar plan or award similar bonus benefits in the future. Bonus Awards under this Plan are a discretionary and extraordinary item of compensation that are outside the normal, regular or expected compensation, and in no way represent any portion of a Participant's salary, compensation, or other remuneration for the purpose of calculating any of the following payments: termination, severance, redundancy, end-of-service premiums, bonuses; long-service awards; overtime premiums; pension or retirement benefits; and any other similar payments and extra benefits; provided that, Bonus Awards are treated as eligible compensation pursuant to, and in accordance with the terms of, the Google LLC 401(k) Savings Plan.

e. BENEFICIARY DESIGNATIONS

If permitted by the Committee, a Participant under the Plan may name a beneficiary or beneficiaries to whom any Bonus Award or portion thereof shall be paid in the event of the Participant's death during the applicable Performance Period or following the applicable Performance Period but prior to the applicable payment date pursuant to Section 4(d). Each such designation shall revoke all prior designations by the Participant and shall be effective only if given in a form and manner acceptable to the Committee. In the absence of any such designation, any Bonus Award shall be paid to the Participant's estate.

f. SUCCESSORS

All obligations of the Company with respect to Bonus Awards granted hereunder, shall be binding on any successor to the Company, whether the existence of such successor is the result of a direct or indirect purchase, merger, consolidation, or otherwise.

g. NONTRANSFERABILITY OF AWARD

No Bonus Award may be sold, transferred, pledged, assigned, or otherwise alienated or hypothecated, other than by will or by the laws of descent and distribution to the extent permitted by Section 4(d). Any attempt to effect such a prohibited transfer shall be void.

h. GOVERNING LAW

The Plan and all Bonus Awards shall be construed in accordance with and governed by the laws of the state of California, but without regard to conflict of law provisions.

7. APPROVAL OF THE PLAN

This Plan was approved by the LDCC on October 19, 2021.

SUBSIDIARIES OF THE REGISTRANT

The following is a list of subsidiaries of Alphabet Inc., omitting subsidiaries which, considered in the aggregate as a single subsidiary, would not constitute a significant subsidiary as of **December 31, 2020** **December 31, 2021**:

<u>Name of Subsidiary</u>	<u>Jurisdiction of Incorporation or Organization</u>
Google LLC	Delaware
XXVI Holdings Inc.	Delaware
Alphabet Capital US LLC	Delaware

Exhibit

CONSENT OF ERNST & YOUNG LLP, INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

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

- (1) Registration Statement (Form S-8 No. 333-207254) pertaining to the Google Inc. 2004 Stock Plan, Alphabet Inc. 2012 Stock Plan, AdMob, Inc. 2006 Stock Plan, UK Sub-Plan of the Alphabet Inc. 2006 Stock Plan, Motorola Mobility Holdings, Inc. 2011 Incentive Compensation Plan and Alphabet Inc. Deferred Compensation Plan,
- (2) Registration Statement (Form S-8 No. 333-212914) pertaining to the Alphabet Inc. 2012 Stock Plan,
- (3) Registration Statement (Form S-8 No. 333-214573) pertaining to the Apigee Corporation 2015 Equity Incentive Plan and the Apigee Corporation 2005 Stock Incentive Plan,
- (4) Registration Statement (Form S-8 No. 333-215873) pertaining to the Alphabet Inc. Deferred Compensation Plan,
- (5) Registration Statement (Form S-8 No. 333-219435) pertaining to the Alphabet Inc. 2012 Stock Plan,
- (6) Registration Statement (Form S-8 No. 333-226309) pertaining to the Alphabet Inc. 2012 Stock Plan,
- (7) Registration Statement (Form S-3 No. 333-229513) of Alphabet Inc.,
- (8) Registration Statement (Form S-8 No. 333-232836) pertaining to the Alphabet Inc. Amended and Restated 2012 Stock Plan,
- (9) Registration Statement (Form S-8 No. 333-236248) pertaining to the Alphabet Inc. Deferred Compensation Plan, and
- (10) Registration Statement (Form S-8 No. 333-240221) pertaining to the Alphabet Inc. Amended and Restated 2012 Stock Plan,
- (11) Registration Statement (Form S-8 No. 333-256731) pertaining to the Alphabet Inc. 2021 Stock Plan, and
- (12) Post-effective Amendment (Form S-8 No. 333-256731) pertaining to the Alphabet Inc. Amended and Restated 2012 Stock Plan and the Alphabet Inc. 2021 Stock Plan;

of our reports dated **February 2, 2021** **February 1, 2022**, with respect to the consolidated financial statements of Alphabet Inc. and the effectiveness of internal control over financial reporting of Alphabet Inc. included in this Annual Report (Form 10-K) of Alphabet Inc. for the year ended **December 31, 2020** **December 31, 2021**.

/s/ Ernst & Young LLP

San Jose, California

February 2, 2021 **1, 2022**

Exhibit

**CERTIFICATION OF CHIEF EXECUTIVE OFFICER
PURSUANT TO
EXCHANGE ACT RULES 13a-14(a) AND 15d-14(a),
AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Sundar Pichai, certify that:

1. I have reviewed this Annual Report on Form 10-K of Alphabet 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 in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rule 15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's audit committee 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 2, 2021

Date: February 1, 2022

/s/ SUNDAR PICHAI

Sundar Pichai
Chief Executive Officer
(Principal Executive Officer)

Exhibit

**CERTIFICATION OF CHIEF FINANCIAL OFFICER
PURSUANT TO
EXCHANGE ACT RULES 13a-14(a) AND 15d-14(a),
AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Ruth Porat, certify that:

1. I have reviewed this Annual Report on Form 10-K of Alphabet 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 in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rule 15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

- (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's audit committee 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 2, 2021

Date: February 1, 2022

/s/ RUTH PORAT

Ruth Porat
Senior Vice President and
Chief Financial Officer
(Principal Financial Officer)

Exhibit

**CERTIFICATIONS OF CHIEF EXECUTIVE OFFICER AND CHIEF FINANCIAL OFFICER
PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

I, Sundar Pichai, certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report on Form 10-K of Alphabet Inc. for the fiscal year ended December 31, 2020 December 31, 2021, fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Annual Report on Form 10-K fairly presents, in all material respects, the financial condition and results of operations of Alphabet Inc.

Date: February 2, 2021

Date: February 1, 2022

By: /s/ SUNDAR PICHAI
Name: Sundar Pichai
Title: Chief Executive Officer
(Principal Executive Officer)

I, Ruth Porat, certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report on Form 10-K of Alphabet Inc. for the fiscal year ended December 31, 2020 December 31, 2021, fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Annual Report on Form 10-K fairly presents, in all material respects, the financial condition and results of operations of Alphabet Inc.

Date: February 2, 2021

Date: February 1, 2022

By: /s/ RUTH PORAT
Name: Ruth Porat
Title: Senior Vice President and Chief Financial Officer
(Principal Financial Officer)

The foregoing certifications are not deemed filed with the Securities and Exchange Commission for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (Exchange Act), nor are they to be incorporated by reference into any filing of Alphabet Inc. under the Securities Act of 1933, as amended, or the Exchange Act, whether made before or after the date hereof, regardless of any general incorporation language in such filing.

DISCLAIMER

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