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strategy x economics

THE VALUE OF GOOGLE CLOUD TO AUSTRALIA

JULY 2021

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GOOGLE CLOUD'S ECONOMIC IMPACT IN AUSTRALIA

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Google Cloud supports a total of **AUD3.2 BILLION** in annual gross benefits to businesses and consumers in Australia. This includes **AUD686 MILLION** to businesses using **Google Workspace** and **Google Cloud Platform**, **AUD698 MILLION** to **Google Cloud Partners**, and **AUD1.8 BILLION** to Australian consumers

ANZ

HealthShare

Businesses across various industry sectors and enterprise sizes have benefitted from the use of **Google Cloud** including ANZ (financial services) and HealthShare (healthcare)

JOB CREATION BENEFITS

Google Cloud currently supports at least **1,500 JOBS** in Australia. These include jobs in Google Cloud Partner companies, as well as jobs brought about by increased hiring as companies expand their revenue streams through the use of Google Cloud products

BROADER IMPACTS FOR AUSTRALIAN SOCIETY

Google Cloud supports a range of other intangible benefits to Australian society:

Google Cloud Platform has facilitated more efficient delivery of public services. For instance, BigQuery has given Australia Post visibility into every stage of the mail delivery process and helps teams make decisions faster

Google Cloud

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Google Workspace for Education, with its suite of free digital collaborative tools, improves access to educational resources and supports learning in schools

Google Workspace for Education

2

All information in this infographic is derived or estimated by AlphaBeta analysis using both proprietary and publicly available information. Google has not supplied any additional data, nor does it endorse any estimates made in this infographic. The estimates are of Google's annual economic impact based on the latest available data.

EXECUTIVE SUMMARY

Digital technologies have become crucial to how Australians conduct their daily lives and work. Through online tools such as Google's search engine, advertising platforms and digital maps, a fast-growing majority of Australian businesses and consumers are interacting with each other and generating significant value for the nation. A recent study finds that annual economic value presented by Google's applications and platforms are worth AUD39 billion for Australian businesses, and AUD14 billion for Australian consumers.[1]

In addition to these established technologies, cloud technologies, in recent years, have emerged as a key driver to accelerate digital transformation in Australia. The adoption and market size of cloud technologies are growing rapidly. In Australia, the share of businesses utilising paid cloud technologies has increased from 31 percent in 2016 to 55 percent in 2020, with smaller businesses leading the way.[2] Australia has one of the most advanced public cloud adoption rates in Asia Pacific, with its public cloud market projected to grow from AUD6.8 billion in 2018 to AUD15 billion in 2023, at an annualised rate of 17 percent.[3] Furthermore, this momentum is expected to continue due to the COVID-19 pandemic. According to a survey of information technology (IT) business leaders in Australia, about 60 percent of organisations have started or expedited cloud initiatives to facilitate remote working.[4] Through fostering the efficient delivery of IT resources over the Internet, cloud technologies allow individuals and entities to access technology services typically requiring high storage and processing needs such as enhanced computing power, data storage and management tools on an as-needed basis, and at significantly lower costs. These eliminate the need for customers to own or operate physical data centres and servers by themselves, which can be cost-prohibitive particularly for small and medium-sized enterprises. In addition, cloud technologies can boost productivity by providing tailored productivity tools, boost revenues through cloud-based business models as well as facilitate the adoption of other advanced technologies such as artificial intelligence (AI) and machine learning. For example, with employees having to spend less time on cost-generating activities such as inter or intra-team coordination and data cleaning and crunching, businesses can reallocate more resources to revenue-generating activities such as business development work.

Taking into consideration these benefits, this report finds that **Google Cloud supports a total of AUD3.2 billion in annual gross economic benefits in Australia** (see Box 1 for an overview of Google Cloud). Google Cloud also **supports over 1,500 jobs in the country, and broader intangible benefits to the society**.

1. The Google applications and services included in the analysis of business benefits include Google Search and Ads, AdSense, Google Maps, Ad Grants, and Google Play. The Google applications and services included in the analysis of consumer benefits include Google Search, Google Maps, Google Play, Drive, Photos, Docs, and Sheets. AlphaBeta (2020). Google's Economic Impact in Australia.
Available at: https://alphabeta.com/wp-content/uploads/2020/12/googles-economic-impact-in-australia-2020.pdf

2. Australian Bureau of Statistics (2021). "Characteristics of internet access: Use of paid cloud computing and cloud services used". Available at: https://stat.data.abs.gov.au/Index.aspx?DataSetCode=ABS_INTERNET_ACCESS and Australian Cyber Security (2021), "Paid Cloud Computing On The Rise Across Australian Businesses". Available at: https://australiancybersecuritymagazine.com.au/paid-cloud-computing-on-the-rise-across-australian-businesses/

3. The public cloud refers to computing services offered by third-party vendors over the public Internet, making them available to anyone who wants to use or purchase them. BCG (2019), Australia's Market Report. Available at: https://www.bcg.com/publications/2019/economic-impact-public-cloud-apac/australia

4. Google Cloud, CIO and IDG (2020), Continuing a Cloud-centric Approach to Digital Transformation.
Available at: https://services.google.com/fh/files/misc/aus_idg_it_leaders_research_report.pdf

BOX 1.
WHAT IS GOOGLE CLOUD?

Google Cloud is a comprehensive suite of cloud computing services which includes **Google Workspace**, a collection of productivity and collaboration tools, software and products such as Gmail, Google Drive, Sheets and Docs, and **Google Cloud Platform (GCP)**, which provides a range of cloud computing services, including storage, networking, and data analytics which can be used to develop, test, and deploy new applications and features quickly.[5] These services allow users to build applications faster, make smarter business decisions, and transform how they connect to each other.

To support the growing demand for cloud technologies and advance the adoption of Google Cloud services, Google has launched two GCP regions in Australia - Melbourne and Sydney. Providing local cloud infrastructure helps accelerate digital transformation in Australia. Primarily, these cloud regions would facilitate faster deployment and lower latency for businesses, as well as support in-country disaster recovery and regulatory needs.[6] For instance, these cloud regions allow Australian businesses and government agencies to meet data sovereignty needs and regulatory requirements.[7]

5. Other products include Chrome Enterprise and Google Maps Platform. Google Cloud (2021), "Products". Available at: https://cloud.google.com/products#section-21

6. Lower latency enables cloud services and applications to be more responsive, improving efficiency for businesses.

7. Google Cloud (2020), "Engaging in a European dialogue on customer controls and open cloud solutions". Available at: https://cloud.google.com/blog/products/identity-security/how-google-cloud-is-addressing-data-sovereignty-in-europe-2020

The key findings of this study are as follows:

- **Google Cloud products bring a total of AUD3.2 billion worth of annual economic benefits to Australian businesses and consumers.** Businesses across various sectors and enterprise sizes experience **AUD686 million** worth of annual economic benefits from the use of Google Cloud. These include the Australian-headquartered multinational **ANZ** (financial services sector) and digital health company **HealthShare** (healthcare sector).

  By enabling real-time collaboration and offering cloud-based data storage and management tools, **Google Workspace** is estimated to generate annual gross economic benefits of **AUD411 million** for businesses. These comprise cost savings, efficiency gains (e.g. experienced by IT security teams and general employees, reduced risk of data breaches), and revenue boost (by freeing up time for revenue-generating activities).

  By reducing processing time and IT infrastructure costs, and boosting revenues, **Google Cloud Platform** (GCP) is estimated to generate total gross benefits of **AUD275 million** annually to Australian businesses.

  By developing additional cloud technology services based on Google Cloud and complementary services, **Google Cloud Partners** in Australia earn an estimated total of **AUD698 million** in revenue annually.[8]

  Furthermore, through a range of applications that help people work seamlessly across different files, **Google Workspace tools like Google Drive, Docs and Sheets** bring about a total estimated annual consumer surplus of AUD1.8 billion to Australian consumers.[9]

- **Google Cloud currently supports over 1,500 jobs in the economy.** It is estimated that more than 1,500 jobs are supported in the economy through the use of Google Cloud.[10] These jobs comprise jobs created in Google Cloud Partner businesses (those jobs that are directly supported through the Google Cloud segment of their business), as well as jobs created as a result of increased hiring demand by businesses that have generated increased revenues from the use of Google Cloud products.

- **Google Cloud brings a range of other intangible benefits to Australian society, particularly in the public and education sectors.** GCP has facilitated more efficient delivery of public services. For instance, Australia Post, the government business enterprise that provides postal services in Australia, has leveraged GCP tools such as BigQuery to help operation managers to oversee real-time updates at every stage of the mail delivery process and identify flow blockages almost instantly.[11] Furthermore, in the education sector, free software applications such as Google Workspace for Education improve access to educational resources and support learning in schools, by providing a suite of digital tools like Google Classroom for online and collaborative learning. These applications are especially crucial to facilitate remote learning for Australian students, in situations such as the COVID-19 pandemic.[12]

8. Google Cloud Partners are intermediaries that provide Google Cloud-related services to end users including selling Google Cloud products as well as other value-adding services such as business services (e.g., training and consultancy), cloud services add-ons, and supporting hardware, networking and IT services. Google Cloud (2021), "Partner Directory". Available at: https://cloud.withgoogle.com/partners/

9. While Google Cloud is mainly enterprise-based, there are several Workspace tools that are available to consumers.

10. Jobs supported refer to new jobs that may have been created through a business' use of Google Cloud products, as well as ongoing employment of jobs that previously existed.

11. Australia Post (2021), "Fast facts about Australia Post". Available at: https://auspost.com.au/about-us/news-media/fast-facts-about-australia-post and Google Cloud (2019), "Australia Post delivers online and in-person for customers". Available at: https://cloud.google.com/blog/topics/customers/australia-post-delivers-online-and-in-person-for-customers

12. Google Apps for Education (2010), 1.2 million NSW school students move to Google Apps for Education, reducing total costs by 66%. Available at: https://static.googleusercontent.com/media/www.google.com/en//apps/intl/en/business/case_studies/nsw_det.pdf and Google, "Canberra Public Schools empower students to "Learn, Anywhere" with Google Workspace for Education and Chromebooks". Available at: https://edu.google.com/why-google/case-studies/canberra-public-school/

ECONOMIC BENEFITS OF GOOGLE CLOUD

Google Cloud products bring about various economic benefits in Australia. This study finds that the annual gross economic value presented by Google Cloud is worth AUD1.4 billion for businesses and AUD1.8 billion for consumers.[13]

1.1 DIRECT ECONOMIC BENEFITS TO BUSINESSES AND CONSUMERS

GOOGLE CLOUD PLATFORM (GCP) AND GOOGLE WORKSPACE HELP BUSINESSES REDUCE COSTS, IMPROVE EFFICIENCY AND INCREASE REVENUES

GCP provides cost effective and efficient tools to improve the performance, reliability and scalability of businesses. By providing a "pay-as-you-go" model for data storage, data processing and other high-workload computing applications, and eliminating the need for on-premises servers, businesses can reduce their IT infrastructure and operations costs. By securely delivering services to users with speed and reliability, powering high-volume data analytics allowing for the easy capture and visualisation of data, and providing reliable scalability, GCP improves the productivity of developer, data management, and IT security teams. According to a study by International Data Corporation (IDC), IT teams that used GCP reported a reduction of 72 percent in the time needed to deploy new IT resources.[14] In addition, GCP helps businesses provide timely delivery of services to customers, and free up their resources to capture new business opportunities, leading to increased revenues. Annually, GCP is estimated to generate total gross economic benefits of AUD275 million to businesses in Australia (Exhibit 1). These comprise cost savings (e.g., IT infrastructure costs), efficiency gains (e.g., experienced by IT and developer teams regarding data management), and revenue boosts from the development of new business lines through cloud products and services.

Businesses using Google Workspace gain productivity benefits through its real-time collaboration and cloud-based data storage and management tools. Google Workspace saves the employee in Australia about seven hours per week on average by reducing the time needed for collaboration, meetings and data management.[15] These tools help to facilitate remote working, especially during times such as the current pandemic. Other benefits include savings in capital and operating expenditures (e.g., costs for server maintenance), reduced risk of a data breach (Google Cloud provides world class security services based on international compliance certifications)[16], and increased revenues (from being able to reallocate more resources to business development activities). For example, with employees having to spend less time on cost-generating activities such as inter or intra-team coordination and data cleaning and crunching, businesses can reallocate more resources to revenue-generating activities such as business development work. In total, Google Workspace is estimated to generate annual gross economic

13. It is important to note that these benefits relate to direct economic benefits received, and do not include the flow-on economic effects generated such as further purchases from their suppliers, or the economic activity generated by the employees of these businesses who spend their wages in the broader economy (indirect or induced spend). As such, the estimated benefits are a conservative representation of Google Cloud's economic impact in Australia.

14. IDC (2020), The Business Value of Improved Performance and Efficiency with Google Cloud Platform. Available at: https://f.hubspotusercontent30.net/hubfs/2135689/idc_business_value_of_google_cloud_platform_whitepaper.pdf?__hstc=210774282.11b4480cf42fd666000d8313426394eb.1622706475827.1622706475827.1622706475827.1&__hssc=210774282.1.1622706475827&hsCtaTracking=5a582dbf-1505-4f91-ad8a-d80b22bfc26f%7Cde033867-77a5-4b4a-ba34-e82873b3e9c6

15. Forrester (2020), The Total Economic Impact™ Of Google G Suite. Available at: https://services.google.com/fh/files/blogs/total_economic_impact_gsuite_forrester.pdf

16. Google Cloud (2021), "Trust and security". Available at: https://cloud.google.com/security

benefits of AUD411 million to businesses in Australia (Exhibit 1).

Google Cloud's benefits have been experienced by businesses of different sizes and from different industry sectors. Box 2 highlights two examples across these contexts.

GOOGLE CLOUD PARTNERS GAIN SIGNIFICANT BENEFITS FROM BEING ABLE TO GROW NEW BUSINESS LINES WITH GOOGLE CLOUD

Google Cloud Partners are certified companies that deliver Google Cloud services to businesses and government agencies.[17] These partners do not only sell Google Cloud products to businesses, but also provide value-adding services related to Google Cloud such as business advisory services on the use of Google Cloud products (e.g., customised training and consultancy), cloud service add-ons, and supporting hardware, networking and IT services.[18] Google Cloud Partners in Australia are estimated to earn a total revenue of AUD698 million from Google Cloud-related products and services annually (Exhibit 1).[19]

GOOGLE WORKSPACE TOOLS IMPROVE PRODUCTIVITY AND CONVENIENCE FOR CONSUMERS IN AUSTRALIA

By allowing digital data to be stored and accessed through multiple devices including laptops, tablets and smartphones, Google's cloud-based services such as Google Drive, Docs, and Sheets provide great convenience to Australian consumers. These services enable them to manage files, folders, music and photos seamlessly without worrying about the location of the

data. The total annual consumer benefit derived from productivity-enhancing Google Workspace tools is estimated at AUD1.8 billion (USD1.2 billion).[20]

Another capability within Google Cloud is the Google Maps Platform (GMP), which enables businesses to leverage real-world insights and location experiences through a suite of features built around "maps" (customised maps and Street View imagery), "routes" (specific point-to-point pathways mapped in Google Maps) and "places" (specific places that can be searched via Google Maps through phone numbers, addresses and real-time signals).[21] Box 3 highlights examples of how GMP has benefited businesses and consumers.

17. Google Cloud (2021), "Partner Directory". Available at: https://cloud.withgoogle.com/partners?sort-type=DISTANCE&address-location=Australia

18. IDC (2020), Partner Opportunity in a Cloud World How Partners Are Winning in the Google Cloud Economy. Available at: https://www.ingrammicrocloud.com/sites/default/files/idc_partner_opportunity_in_a_cloud_world.pdf

19. This value includes revenue gained through resale margins and the sale of value-adding services such as business services (e.g., training and consultancy), cloud services add-ons, and supporting hardware, networking and IT services.

20. Consumer benefits supported by Google are challenging to measure and calculate because individuals typically do not pay for the services. In the absence of price indicators, we adopted the economic consumer surplus principle, which relates to the economic value experienced by consumers from a good, over and above what they had to pay (if at all), for the good. This data was extracted from a 2020 survey of 535 Internet users in Australia. This value was also part of the estimate of Google's annual economic impact shown in the following report: AlphaBeta (2020), Google's Economic Impact in Australia. Available at: https://alphabeta.com/wp-content/uploads/2020/12/googles-economic-impact-in-australia-2020.pdf

21. Google Cloud: Google Maps Platform. Available at: https://cloud.google.com/maps-platform

EXHIBIT 1:

GOOGLE CLOUD BRINGS ABOUT AN ESTIMATED AUD1.4 BILLION WORTH OF GROSS ANNUAL ECONOMIC BENEFITS TO AUSTRALIAN BUSINESSES

ANNUAL GROSS ECONOMIC BENEFITS FROM GOOGLE CLOUD PRODUCTS TO BUSINESSES IN AUSTRALIA, 2020
AUD MILLIONS

Note: Numbers may not sum due to rounding. Figures are estimated based on the latest available annual data as at time of research in 2021.
SOURCE: AlphaBeta analysis with approved Google methodology

BOX 2.
GOOGLE CLOUD BENEFITS BUSINESSES IN AUSTRALIA AND NEW ZEALAND

ANZ: USING GOOGLE CLOUD TO GENERATE BUSINESS INSIGHTS TO ADD VALUE TO CUSTOMERS

The Australia and New Zealand Banking Group (ANZ) is Australia's third largest bank by market capitalisation, with its Institutional Banking division operating across 34 markets globally.[22] ANZ turned to Google Cloud to help deliver meaningful data insights quickly to help institutional customers make informed business decisions. Using Google Cloud's data analytics capabilities, ANZ has generated powerful insights as well as improving productivity across the organisation - for example, reducing the time to analyse aggregated, de-identified credit card data from days to seconds. Furthermore, ANZ leveraged Google Kubernetes Engine to provide customised data services and data visualisation experiences to its customers. In addition, Cloud Composer enabled the organisation to orchestrate data movement and transformation.

HEALTHSHARE: ACHIEVING SCALABILITY RAPIDLY TO SERVE CUSTOMERS IN THE HEALTHCARE INDUSTRY

Founded in 2010, HealthShare connects healthcare stakeholders to optimise patient outcomes. One of the health technology company's flagship products, BetterConsult, is a digital questionnaire that patients fill out before doctor's appointments. This allows doctors to spend more time meeting patient needs and less time sifting through medical histories. Initially, the business started operations running virtual machines in a hosted data centre environment. However, the company began to experience reliability issues during high-traffic periods and when Google Cloud launched its Sydney Region in 2017, the company opted to move across. With Google Cloud, HealthShare could scale to support demand peaks of 6,000 requests per minute and halve the average latency for customer requests, which contributes to better performance and experience for users.[23] Google Cloud has also facilitated the company's aim of entering the US market, as it supports customers subject to the United States Health Insurance Portability and Accountability Act – a federal law that establishes data privacy and security requirements for organisations which handle personal-protected health information.

22. Google Cloud (2019), "ANZ accelerates its digital transformation with Google Cloud smart analytics".
Available at: https://cloud.google.com/blog/topics/customers/anz-accelerates-its-digital-transformation-with-google-cloud-smart-analytics
23. Google Cloud (2017), "HealthShare: Improving healthcare efficiency and performance with Google Cloud".
Available at: https://cloud.google.com/customers/healthshare

BOX 3.
GOOGLE MAPS PLATFORM (GMP) HAS BENEFITTED BUSINESSES AND CONSUMERS

The geospatial services offerings by GMP can help increase the efficiency of business operations and improve the everyday experiences of consumers. For example, embedding Google Maps Platform can enable the tracking of locations of assets in real-time, saving time and cost.

For instance, Fleetminder, an Australian company supplying asset tracking solutions in 12 countries, has used GMP to improve the efficiency of its service, and minimise errors.[24] After leveraging GMP, the company was able to reduce the number of deliveries to incorrect addresses by 20 percent. The Geocoding Application Programming Interfaces (APIs) offered by GMP enabled the company to create a unique web-based system that visualises the vehicle location in real-time and generates easy-to-use reports monitoring their conditions. With this dashboard, Fleetminder was able to track details about driving habits, which led to a 50 percent decrease in inefficient driving. Staff coordinating multiple deliveries can also task the system to generate the fastest and most efficient routes, saving time and fuel costs. As a result, drivers spend less time on the road and reduce employee overtime by 25 percent.

In the travel industry, Rome2rio, an Australian travel booking website and app, leveraged Google Cloud's GMP to analyse a large volume of user data and requests daily.[25] Through GMP APIs such as Distance Matrix API, which automatically provides the travel distance and time between start and end points suggested by users, Rome2rio was able to handle around 100,000 requests per day and meet growing user demand.

GMP has also empowered Australian consumers with the ability to use geospatial information effectively to inform important purchasing decisions. Rent.com.au, an Australian website that lists properties for rent, is a case in point. Users of Rent.com.au are able to filter rental locations according to their desired areas or radius.[26] Through the GMP APIs, Rent.com.au can convert almost 5,000 property addresses into geographic coordinates instantly every day, and pin specific locations of real estate agents or landlords, which enhances the rental search experience for potential customers.

24. Google Cloud (2020), "Fleetminder: mapping and tracking the locations of vehicles". Available at: https://cloud.google.com/customers/fleetminder
25. Google Cloud (2020), "Rome2rio: Delivering intelligent travel planning with Google Maps Platform and BigQuery." Available at: https://cloud.google.com/customers/rome2rio
26. Google Cloud (2020), "Rent.com.au: Matching renters to ideal houses and suburbs with Google Maps Platform." Available at: https://cloud.google.com/customers/rent-com-au

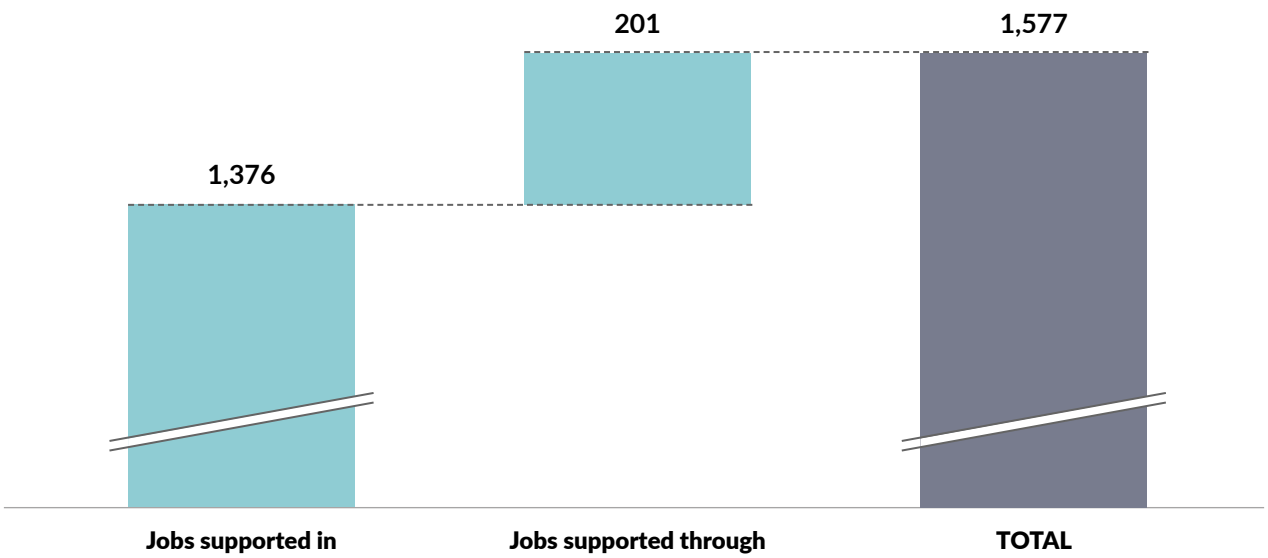
1.2 JOB CREATION BENEFITS

Google Cloud is estimated to support over 1,500 jobs in Australia (Exhibit 2). These include jobs in Google Cloud Partner companies, contributing to the government's efforts in promoting high skilled jobs,[27] as well as jobs created through the use of Google Cloud products that have led to business expansion and increased hiring demand.[28] Businesses that expand their reach to new customers through reallocation of resources and development of new business services via GCP and Google Workspace would require increased employees to meet this additional demand.

EXHIBIT 2:

GOOGLE CLOUD SUPPORTS OVER 1,500 JOBS IN AUSTRALIA

JOBS SUPPORTED THROUGH THE USE OF GOOGLE CLOUD PRODUCTS IN AUSTRALIA, 2020
NUMBER



1. The estimates are based on the net benefits to businesses. Furthermore, as the returns on investment include a range of benefits from cost savings to revenue boosts, we only utilise the benefits related to revenue boosts.

Note: Numbers may not sum due to rounding. Figures are estimated based on the latest available annual data as at time of research in 2021.

SOURCE: AlphaBeta analysis

27. Australian Government, Department of Industry, Science, Energy and Resources (2021), "What is the Government doing in skills?" Available at: https://www.industry.gov.au/data-and-publications/australias-tech-future/skills/what-is-the-government-doing-in-skills and Budget 2021-22 (2021), "Creating jobs and rebuilding our economy". Available at: https://budget.gov.au/2021-22/content/jobs.htm

28. Jobs supported refer to new jobs that may have been created through a business' use of Google Cloud products, as well as ongoing employment of jobs that previously existed.

BROADER IMPACT TO SOCIETY

Beyond the benefits to businesses and individuals, Google Cloud also brings a range of benefits to the broader Australian society that may not accrue directly to a specific company or person. These benefits might not appear in gross domestic product (GDP) measures today, but consist of other objectives that are important to strengthening Australia's economy over time.

FACILITATING THE EFFICIENT DELIVERY OF PUBLIC SERVICES IN AUSTRALIA

Google Cloud helps facilitate the efficient delivery of public services in Australia. One key beneficiary in the public sector is Australia Post, the government business enterprise that provides postal services in Australia. In 2018, Australia Post delivered more than 3.3 billion items to 11.9 million delivery points across the country and to 190 countries worldwide.[29] The business has also been rapidly evolving, expanding into parcel delivery and growing its digital business to include retail, travel, and financial services and solutions.

To harness the huge amount of data generated across the organisation, Australia Post turned to an enterprise data analytics platform powered by Google Cloud. The results of moving to Google Cloud have been transformational for the organisation. Through BigQuery, a cloud-based data analytics warehouse, Australia Post has gained visibility into every stage of the mail delivery process and helps its teams make decisions faster. The amount of time taken to perform analytics has been reduced by a factor of 10, including the length of time needed to use visualisation-intensive business intelligence applications. This means operation managers can now see what is happening in sorting facilities in real time, helping to identify flow blockages almost instantly. Previously, these types of insights would only be available at the end of the day, but now they are delivered within 15 seconds – about 300 times faster. Australian Post's Executive General Manager, Transformation & Enablement, John Cox, remarked, "The need to transform and embrace data has been huge for us over the last decade, so partnering with Google Cloud was an easy choice

29. Google Cloud (2019), "Australia Post delivers online and in-person for customers".
Available at: https://cloud.google.com/blog/topics/customers/australia-post-delivers-online-and-in-person-for-customers

for us. With near real-time data analytics, we can free up valuable resources, act quicker and provide better service to the millions of Australians that rely on us every day."

GOOGLE WORKSPACE FOR EDUCATION: IMPROVING ACCESS TO DIGITAL EDUCATIONAL TOOLS AND SUPPORTING REMOTE LEARNING

Google Workspace for Education, a Google Cloud product, is provided free to educational institutions such as K-12 schools and higher-education institutions in Australia. Google Workspace for Education includes collaboration tools (e.g., Docs, Forms), productivity tools (e.g., Classroom, Assignments) and communication tools (e.g., Meet, Chat).[30]

As it is provided as a free service, schools save on software licences and access to content. Previously, the Department of Education and Training (DET) was using a locally hosted email solution that presented challenges in terms of hidden costs and low user adoption rates. DET was determined to source a contemporary email system that was highly scalable and allowed seamless information sharing for the country's 1.2-million student population[31] - and turned to Google Workspace for Education. DET's Gmail rollout increased the email storage allocated to students by a multiple of over 175 times from 35 megabytes to 7 gigabytes. Besides affordability, the accessibility of Google Workspace for Education can help bridge the gap in learning and academic opportunity. In 2020, the Australian Bureau of Statistics found that 39 percent of people aged 20 to 64 years who lived in a major city had a bachelor's degree or above, compared with 17 percent of those in remote or very remote areas in Australia.[32] By allowing participation regardless of location, language, and device preference, Google Workspace for Education allows students to join lessons virtually and communicate with peers and teachers remotely.

Furthermore, Google Workspace for Education has facilitated remote learning, which was especially

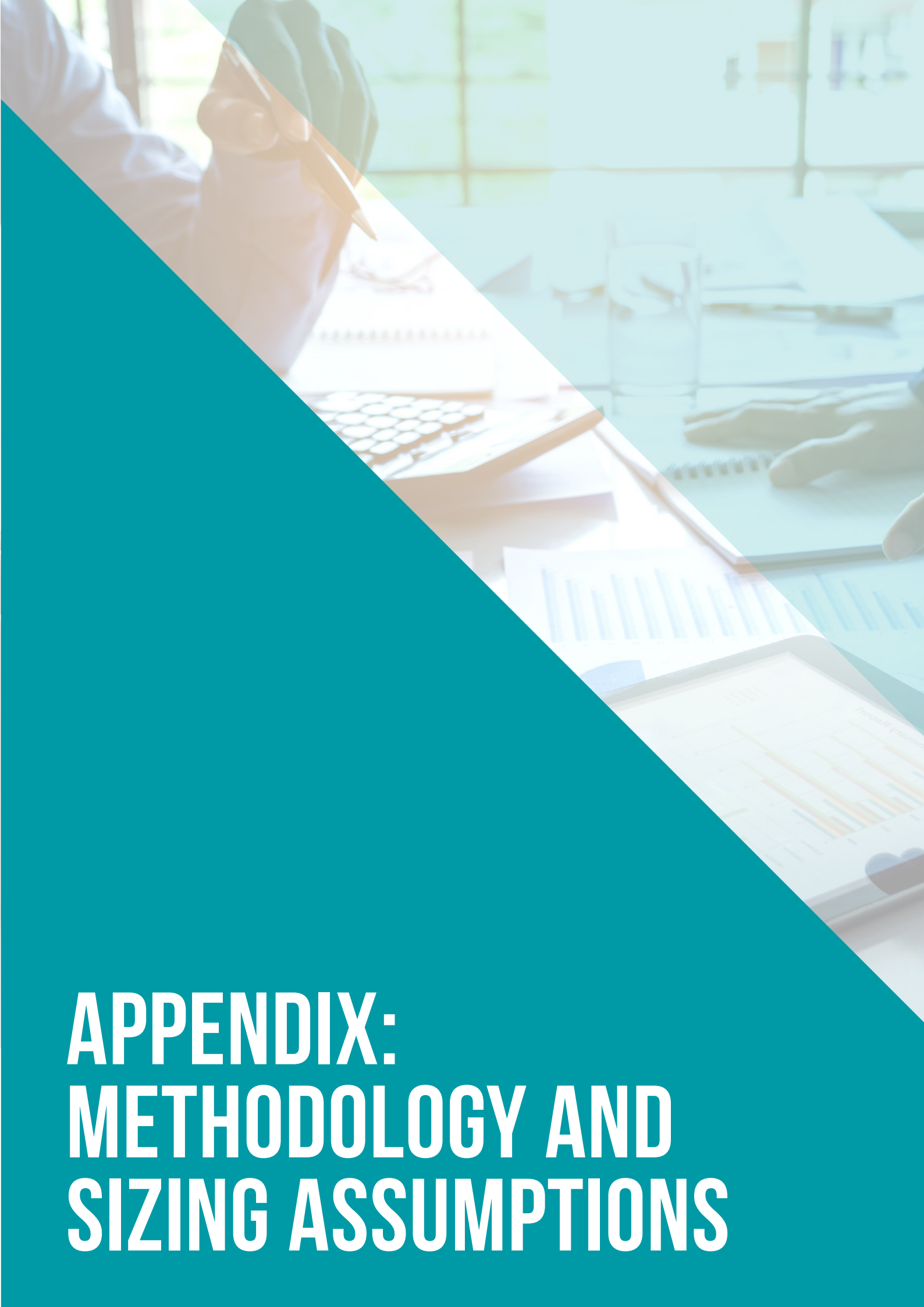
30. Google (2021), "Google Workspace for Education". Available at: https://edu.google.com/products/workspace-for-education/

31. Google Apps for Education (2010), 1.2 million NSW school students move to Google Apps for Education, reducing total costs by 66%. Available at: https://static.googleusercontent.com/media/www.google.com/en//apps/intl/en/business/case_studies/nsw_det.pdf

32. Australian Bureau of Statistics (2020), "Education and Work, Australia". Available at: https://www.abs.gov.au/statistics/people/education/education-and-work-australia/latest-release

important during the COVID-19 pandemic. For instance, teachers can provide instant feedback through the Classroom tool, enhancing student engagement and performance. Amid the shift to remote learning, the Australian Capital Territory (ACT) Government aims to provide over 21,000 Google Chromebooks to public schools between 2021 and 2022.[33] These laptops are equipped with Chrome Education licenses that not only allow teachers to conduct customised online lessons that are synchronised across multiple Chromebook devices, but also provide a conducive learning environment for students. Students can benefit from personalised learning experiences with the flexibility to learn at their own pace. In addition, Chromebook apps can help students navigate the online world with confidence while improving digital literacy and comprehension skills. For example, Epic! is the world's largest digital reading platform for children and has a massive library of books, audiobooks, videos and quizzes to help children develop a love of reading and learning.[34] The built-in accessibility features of the Chromebook also help students with learning differences in their education. For example, Don Johnston's learning tools, which incorporate features to support students with dyslexia and dysgraphia, ranging from a picture-supported dictionary to Dynamic Text Levelling, can be downloaded onto Chromebook and is compatible with any webpage, Google Doc, or portable document format (PDF).[35]

33. CRN (2020), "ACT puts out call for 20K Chromebooks". Available at: https://www.crn.com.au/news/act-puts-out-call-for-20k-chromebooks-553157
34. Google The Keyword (2019), "If you give a student a Chromebook". Available at: https://blog.google/outreach-initiatives/education/chromebook-student-benefits/
35. Chromebook App Hub (2021), "Snap&Read". Available at: https://chromebookapphub.withgoogle.com/apps/snap-read



APPENDIX: METHODOLOGY AND SIZING ASSUMPTIONS

ECONOMIC BENEFITS

BENEFITS FROM THE USE OF GOOGLE WORKSPACE

We estimated the annual expenditure on Google Workspace in Australia based on the number of companies using Google Workspace that are based in Australia; the average number of employees per company and the average annual spend on Google Workspace per employee.[36] We excluded companies that do not employ staff (over 60 percent). To estimate the benefits generated by businesses through Google Workspace, a return on investment (ROI) ratio of 176 percent was applied.[37]

BENEFITS FROM THE USE OF GOOGLE CLOUD PLATFORM (GCP)

We derived the total annual expenditure on GCP by estimating Google's share of the Cloud IaaS, PaaS and SaaS annual spending in Australia and subtracting the annual spending on Google Workspace (as it is a major component of the SaaS market).[38] As there are no localised data for Australia, we proxied Google share using the global estimates. To estimate the benefits generated by businesses through GCP, a ROI ratio of 148 percent was applied.[39]

36. CNBC (2020), "Google's G Suite now has 6 million paying businesses, up from 5 million in Feb. 2019". Available at: https://www.cnbc.com/2020/04/07/google-g-suite-passes-6-million-customers.html, SimilarTech (2021), "G Suite". Available at: https://www.similartech.com/technologies/g-suite, Australian Bureau of Statistics (2020), "Counts of Australian Businesses, including Entries and Exits". Available at: https://www.abs.gov.au/statistics/economy/business-indicators/counts-australian-businesses-including-entries-and-exits/latest-release and Google Workspace (2021), "Pricing". Available at: https://workspace.google.com/intl/en_au/pricing.html

37. Forrester (2020), The Total Economic Impact™ Of Google G Suite. Available at: https://services.google.com/fh/files/blogs/total_economic_impact_gsuite_forrester.pdf

38. BCG (2019), Australia's Market Report. Available at: https://www.bcg.com/publications/2019/economic-impact-public-cloud-apac/australia, Statista (2020), "Cloud infrastructure as a service (IaaS) and platform as a service (PaaS) vendors market share for revenues worldwide in 2019 and 2020". Available at: https://www.statista.com/statistics/1052864/worldwide-iaas-paas-vendor-share/, and Statista (2021), "Public cloud software as a service (SaaS) market share worldwide from 2017 to 2020, by vendor.". Available at: https://www.statista.com/statistics/478112/saas-vendor-market-share-ranking-worldwide/

39. IDC (2020), The Business Value of Improved Performance and Efficiency with Google Cloud Platform. Available at: https://f.hubspotusercontent30.net/hubfs/2135689/idc_business_value_of_google_cloud_platform_whitepaper.pdf?__hstc=210774282.11b4480cf42fd666000d8313426394eb.1622706475827.1622706475827.1622706475827.1&__hssc=210774282.1.1622706475827&hsCtaTracking=5a582dbf-1505-4f91-ad8a-d80b22bfc26f%7Cde033867-77a5-4b4a-ba34-e82873b3e9c6

ADDITIONAL REVENUES EXPERIENCED BY GOOGLE CLOUD PARTNERS

We estimated the total annual expenditure on Google Cloud in Australia through Google Cloud Partners by taking our estimated annual expenditure on Google Cloud and the share of expenditure through these partners.[40] We then applied an annual multiplier ratio of partner revenues to Google Cloud technology sold.[41]

CONSUMER SURPLUS OF GOOGLE DRIVE, DOCS, AND SHEETS

We calculated the consumer surplus of Google Drive, Docs, and Sheets to consumers using willingness to pay, where consumers were asked to value their favourite online cloud-based file storage and document collaboration service. Results from a consumer survey of 535 Internet users in Australia were used.[42] This sample size is statistically significant based on Australia's online population, at a 95 percent confidence level (the level typically adopted by researchers).

JOB CREATION BENEFITS

We estimated the number of jobs that are supported by Google Cloud products based on the breakdown of economic benefits (only benefits related to revenue boosts) by sector and the revenue per worker in each sector. The breakdown of economic benefits by sector was calculated based on the average of the following two metrics: 1) share of businesses using paid cloud computing services (to proxy for the use of Google Cloud) by sector; and 2) revenues of businesses in each sector.[43] This average share is then divided by the respective revenue per worker figures for each sector to obtain the number of jobs created. For jobs supported in Google Cloud Partners, as these organisations are technology companies, we only used information from the relevant ICT industries including software publishing, data processing, web hosting and electronic information storage services.[44]

40. IDC (2020), Partner Opportunity in a Cloud World How Partners Are Winning in the Google Cloud Economy. Available at: https://www.ingrammicrocloud.com/sites/default/files/idc_partner_opportunity_in_a_cloud_world.pdf

41. Canalys (2019), Cloud spend to surpass US$143 billion in 2020, driven by IT channel. Available at: https://www.canalys.com/newsroom/canalys-cloud-spend-to-surpass-us143-billion-in-2020-driven-by-it-channel

42. For further details on the consumer survey, please refer to AlphaBeta (2020), Google's Economic Impact in Australia. Available at: https://alphabeta.com/wp-content/uploads/2020/12/googles-economic-impact-in-australia-2020.pdf

43. Australian Bureau of Statistics (2021), "Counts of Australian Businesses, including Entries and Exits". Available at: https://www.abs.gov.au/statistics/economy/business-indicators/counts-australian-businesses-including-entries-and-exits/latest-release and Australian Bureau of Statistics (2021), "Characteristics of internet access". Available at: https://stat.data.abs.gov.au/Index.aspx?DataSetCode=ABS_INTERNET_ACCESS

44. Australian Bureau of Statistics (2013), "Division J – Information Media And Telecommunications". Available at: https://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/9F25FC6061382290CA257B9500133B6F?opendocument

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