Access Partnership

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strategy x economics

GOOGLE'S ECONOMIC IMPACT IN AUSTRALIA

Helping build Australia's digital future through technology

October 2022

IMPORTANT INFORMATION ON CONTENTS

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Part of Access Partnership, a global technology public policy consultancy, AlphaBeta is a strategy and economics advisory business serving clients across Asia and globally. We work with the public sector, corporations, NGOs, not-for-profits and investors to identify opportunities and develop strategies to grow, improve service delivery, support economic prosperity and generate tangible impact.

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BY LEVERAGING DIGITAL TECHNOLOGIES, AUSTRALIA COULD GAIN UP TO $56.7 BILLION IN 2030

Australia could benefit from higher labour productivity worth **$25 billion** by reducing labour market frictions and upskilling workers

$27.2 billion worth of cybercrime costs could be reduced by deploying AI in cybersecurity and training the population on cyber threats

Australia could mitigate up to **$4.5 billion** of property damage and **591 life years lost** in natural disasters

GOOGLE IS HELPING TO BUILD AUSTRALIA'S DIGITAL FUTURE

1. **Skilling and education** for jobseekers, small businesses, and students
2. **Cybersecurity** through advanced safety technology and a secure cloud platform
3. **Sustainability and disaster preparedness** through AI technologies, insight tools, and detection systems

GOOGLE'S PRODUCTS HAVE DELIVERED ECONOMIC BENEFITS TO BUSINESSES AND CONSUMERS

Consumers

Google supports **$19.5 billion**[1] in benefits to consumers annually; an average Internet user derives **$763** of benefits from Google's products annually

Google Search allows the average user in Australia to save more than **4.8 days** or **115 hours** each year by allowing almost instantaneous access to information online

Businesses

Google supports **$47.1 billion**[2] in benefits to businesses annually

Google supports over **133,300 jobs,** and a further **186,500 jobs** are enabled in the wider economy

1. Google products analysed consist of Google Search, Maps, Play, Drive, Photos, Docs, and Sheets.
2. Google products analysed consist of Google Search, Ads, AdSense, Maps, Play, Cloud, and Ad Grants.

EXECUTIVE SUMMARY

Digital technologies, such as advanced communication networks, artificial intelligence (AI), and digital job platforms, play a crucial role in building a future-ready and resilient Australia. They are critical in allowing businesses and consumers to better predict, minimise and manage the impacts of future societal challenges, such as natural disasters, and facilitating the country's digital future.

For example, AI can help reduce cybersecurity risks by automating the prevention and detection of cyberthreats, and improve the country's natural disaster response by enhancing accuracy when detecting and forecasting future natural disasters.[2] Digital technologies can increase Australia's resilience in the face of these key challenges, and Google remains committed to enabling this effort through its products, services, investments, and initiatives.

By leveraging digital technologies, Australians can be better prepared for three critical challenges of the next decade:

1. **Shortage of skilled workers to support the growing digital economy**
2. **Increasing cybersecurity risks as the economy digitises**
3. **Growing risk of climate change-induced natural disasters[1]**

The key findings of this study are as follows:

- **Australia stands to gain up to $56.7 billion in annual economic value in the year 2030 by adopting digital technologies to manage the three emerging societal challenges (digital skills shortages, cybersecurity risks, and the rise of climate change-induced natural disasters).[3]** Australia is currently facing a digital talent shortage. For instance, the current supply of 6,500 Information Technology (IT) graduates per year will not be sufficient to meet the average annual demand for 60,000 additional Information, Media and Telecommunications (IMT) sector workers (between 2021 to 2026).[4] By reducing frictions in the job search process and enhancing digital skills training, digital technologies can boost labour productivity and create up to an additional $25 billion in Gross Domestic Product (GDP) per year. With increased digitalisation, many new vulnerabilities are opened up for cybercriminals to exploit. Deploying AI, secure cloud services, and educating the public about cybercrime prevention can save businesses and consumers $27.2 billion in annual losses. Finally, climate change is increasing the frequency and severity of natural disasters, and disaster events currently cost Australia an average of $38 billion per year.[5]

Improving emergency response times can mitigate up to $4.5 billion in annual damage costs to property, crops, and livestock for Australia in 2030. Most importantly, in 2030, digital technologies can protect Australians from up to 591 life years lost due to deaths and injuries.[6]

- **Google is helping Australia build resilience in four key areas: digital future, skilling and education, cybersecurity, as well as sustainability and disaster preparedness.** Google's Digital Future Initiative was launched in 2021 to lay key foundations for a robust digital economy in Australia.[7] Under the Grow with Google program, Google provides free digital skilling training to small businesses and individuals. To date, over 600,000 Australians have benefitted from the company's digital skilling training programs.[8] To enhance cybersecurity, Google has rolled out initiatives such as Google Safe Browsing, which ensures that users of Google's products are immediately notified whenever they attempt to enter dangerous sites.[9] The enhanced protection feature also automatically warns users of leaked passwords, improving the security of consumers and enterprises.[10] Sustainability is also a priority. By 2030, all Google data centres and offices will run on carbon-free energy 24/7, and 120% of the water used by the company will be replenished.[11] Furthermore, to strengthen Australia's resilience against the effects of climate change, Google enables the use of AI for natural disaster detection and post-disaster rebuilding applications. For example, a $1.4 million grant from Google.org, the company's philanthropic arm, has allowed researchers to use AI for real-time predictions of bushfire hazards.[12]

- **Google's products provide $19.5 billion and $47.1 billion in annual economic value to Australian consumers and businesses, respectively.** Furthermore, Google supports over 133,300 jobs, and a further 186,500 jobs are enabled across businesses' supply chains. Through the use of Google's products, which include Google Search, Maps, Play, Drive, Photos, Docs, and Sheets, Australian consumers enjoy $19.5 billion worth of annual benefits, and an average Internet user derives $763 of value annually. Google's products also offer time savings; for example, Google Search is estimated to save each Australian user about 4.8 days, or 115 hours, a year. Additionally, Google's products enable businesses to increase revenues and expand their reach domestically and internationally while capturing efficiency gains. These benefits are estimated at $47.1 billion annually – with 61% received by small and medium-sized businesses (SMBs).[13] With this business growth fuelled by Google's products, demand is created for additional workers. In addition, as businesses ramp up production of their goods or increase their services, the demand for raw materials and supplies in turn boosts hiring across the supply chain network.

01

TECHNOLOGY STRENGTHENS AUSTRALIA'S ECONOMIC RESILIENCE

1.1 Australia is focusing on building economic resilience for the future

Australia has demonstrated resilience against multiple crises over the past few years, including the COVID-19 pandemic and various natural disasters. A common call to action to 'build back better' in the aftermath of each occasion has nurtured a culture of resilience against future national crises. For instance, Australia ranks 9th (of 53 countries) in the Bloomberg Covid Resilience Ranking, which scores countries across various strengths, such as their reopening strategies, quality of life during the pandemic, and overall level of public health management of the COVID-19 virus.[14]

With regard to natural disaster resilience, the country has been improving its preparedness. Given the increasing frequency of disaster events in recent years, the National Recovery and Resilience Agency was established in 2021 to help the country better respond in times of emergencies, facilitate community recovery, and be prepared for future natural disasters.[15] Some initiatives by the agency include helping to fund disaster recovery programs, working with local communities and not-for-profits, and providing monitoring and operation coordination for domestic and international emergencies.[16] The NRRA and Emergency Management Australia (EMA) have now been merged to create the National Emergency Management, Resilience and Recovery Agency (NEMRRA).[17] However, there is still a need to prepare against future societal challenges to ensure continued resilience in Australia.

Australia ranks 9th (of 53 countries) in the Bloomberg Covid Resilience Ranking, which scores countries across various strengths, such as their reopening strategies, quality of life during the pandemic, and overall level of public health management of the COVID-19 virus.

1.2 Innovation and technologies are key to addressing societal challenges, building Australia's resilience over the next decade

As inflationary pressures have risen globally, Australia is also facing a period of high inflation. Australia's inflation rate is forecasted to peak at 7.8% by December 2022 with inflationary pressures remaining even into the following year.[18] In addition to the inflationary environment, Australia also faces three emerging societal challenges that could potentially pose significant economic, environmental, and social costs to the country:

1. ***Shortage of skilled workers to support the growing digital economy;***

2. ***Increasing cybersecurity risks as the economy digitises; and***

3. ***Growing risk of climate change-induced natural disasters.***

Given the government's intention to grow the digital economy and reach 1.2 million tech jobs by 2030, technology can provide solutions to some of the country's most pressing needs.

By reducing labour market frictions and upskilling workers, digital technologies can facilitate higher labour productivity worth $25 billion in 2030

Over the years, the digital economy has created a steady stream of new job opportunities for Australians. Still, the talent supply to fill these technology-focused roles has been unable to keep up with demand – hindering the country's ability to benefit from the fast-growing digital economy.[19] Based on data from the Australian Department of Education, an average of 6,500 students graduate with IT degrees each year.[20] This fails to meet the yearly demand for 60,000 additional Information, Media and Telecommunications (IMT) sector workers (between 2021 to 2026) estimated by Deloitte Access Economics.[21]

The shortage of digital skills is a pressing issue, not just in the IMT sector but in the wider economy. Around 87% of jobs in Australia today require digital skills, but digital talent issues such as acquisition, retention, and upskilling continue to be challenging and are top priorities for over 69% of businesses.[22]

Australia can continue strengthening its economic resilience by developing a capable and adaptable workforce through regular up-skilling and reskilling. There are three ways in which digital education can improve the labour market's digital readiness:

1. ***Personalised learning promises to enhance the quality of education, increasing the supply of technologically skilled labour;***

2. ***Digital job platforms and career matching services are key to reducing labour market frictions; and***

3. ***Online retraining programs also increase the accessibility of training, enabling workers to equip themselves with the necessary digital skills whenever they need it and at their own pace.[23]***

Such platforms help efficiently match and train workers with in-demand digital skills, potentially increasing productivity and driving an incremental **$25 billion** annual GDP in 2030.

Cybersecurity risks can be reduced by $27.2 billion in 2030 from the deployment of Artificial Intelligence (AI) and online cybersecurity training

The push to digitise Australia has increased online activities significantly, opening up many new vulnerabilities for cybercriminals to exploit. Cybercrimes are increasingly sophisticated because of technological advancements, potentially causing even greater or longer-term economic impacts. According to an IBM study on data breaches, the average cost of a data breach grew from $1.9 million to $2.8 million between 2017 and 2021.[24] However, a large proportion of Australians are not equipped to identify and deal with the threats of cybercrime despite their increasing concerns over them. While 61% of Australians are more worried than ever about falling victim to cybercrime, more than 47% do not know how to protect themselves against these threats.[25] Failing to safeguard against cybersecurity risks is costly to businesses and

consumers – self-reported business and consumer losses in the financial year 2020-2021 totalled more than $33 billion and are estimated to cost more than $55.2 billion annually by 2030.[26]

As Australia continues to invest in its digital future, enhancing the country's cybersecurity is essential in building the resilience of its digital economy. Digital technologies such as AI and online education are critical measures that businesses and consumers can adopt against cyberthreats. AI is key to automating the prevention and detection of cyberthreats. It provides faster responses to cybersecurity incidents, ultimately reducing the cost of data breaches for businesses by an average of 80%.[27] In addition, free online courses and resources on cybersecurity training are available to help educate the public on preventive measures against cyberthreats. This is noteworthy as cybersecurity training has been found to reduce the costs of cyber incidents for consumers by up to 70%.[28] By deploying AI in cybersecurity and training the population through online cybersecurity training, Australian businesses and consumers are estimated to save **$27.2 billion** in reduced annual cybercrime costs in 2030 alone.

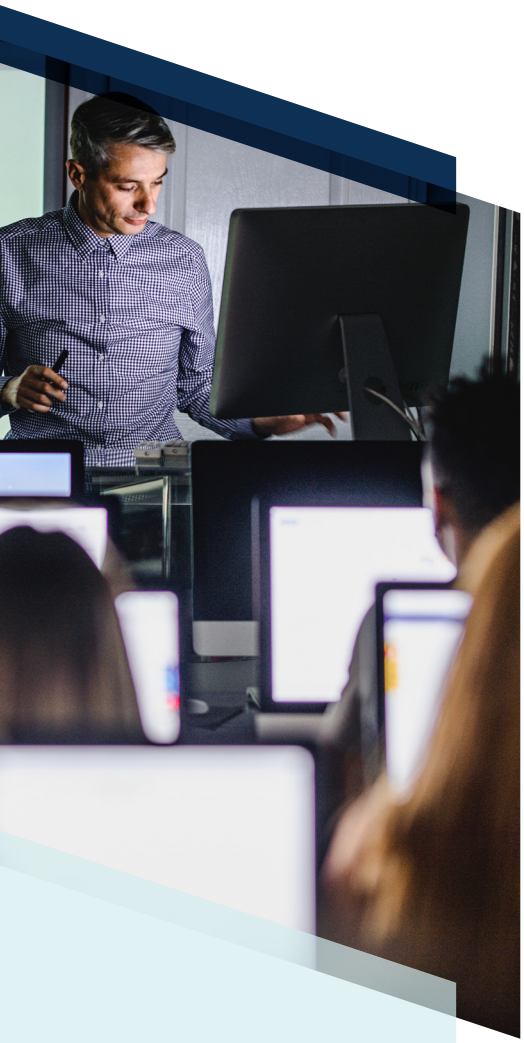
Up to $4.5 billion of property damage and 591 life years lost can be mitigated in the year 2030 by leveraging technologies to combat natural disasters induced by climate change

Much like the rest of the world, Australia faces significant climate-related challenges that will lead to higher economic costs. Due to the effects of climate change, natural disasters are expected to increase in frequency and severity, impacting infrastructure and the livelihoods of Australians. Natural disasters cost Australia an estimated $38 billion in 2020 – around 2% of Australia's GDP – and the growing severity of weather events could increase annual reconstruction costs by up to $73 billion by 2060.[29] The impact of these disasters varies across states – Queensland and New South Wales will account for two-thirds of the costs of natural disasters between 2020 and 2060.[30] The rising cost of natural disasters could hinder the country's economic progress as an increasing amount of resources are allocated to address the risks of climate change and minimise their impacts.

Digital technologies, such as communication systems, geospatial data analytics, and drones, can significantly minimise the costs of future natural disasters in Australia. Improved communication technologies can reduce emergency response times and facilitate more efficient disaster response and support teams.[31] For example, AI can help enhance accuracy when detecting and forecasting future natural disasters, while geospatial data analytics and drones allow rescue teams to map out areas of damage in real-time and search larger areas for more efficient aid delivery.[32] In 2030, the application of technologies in disaster response is expected to mitigate up to **$4.5 billion** in annual damage to property, crops, and livestock.[33] More importantly, digital technologies can protect Australians from up to 591 life years lost due to deaths and injuries caused by natural disasters in 2030.[34]

02

GOOGLE IS HELPING BUILD ECONOMIC RESILIENCE IN AUSTRALIA



In light of these challenges faced by Australia, Google is investing and developing initiatives to tackle future economic and social challenges and build an inclusive digital future for Australians.

The following sections show examples of Google's commitment in some key areas: digital future; skilling and education; cybersecurity; sustainability and disaster preparedness.

2.1 Helping build an inclusive digital future

Google actively helps to build Australia's economic resilience by facilitating the country's digital transformation efforts and digital inclusiveness. For instance, Google launched the Digital Future Initiative in 2021, a program that aims to lay key foundations for a robust digital economy in Australia.[35] The $1 billion initiative will invest in and build Australia's infrastructure, research, and partnerships to position the country - and Australians - as leaders in the global digital economy. The initiative is estimated to directly support more than 6,500 jobs, with another 28,000 jobs across Australia's workforce.[36]

Apart from the Digital Future Initiative, Google is supporting creative industries with its digital products, and Google.org, together with not-for-profit organisation INCO, has also launched the $750,000 First Nations Digitisation Fund to leverage technology to improve access to areas of health, education, and employment for First Nations communities.[37]

The $1 billion Digital Future Initiative will invest in and build Australia's infrastructure, research, and partnerships to position the country - and Australians - as leaders in the global digital economy. The initiative is estimated to directly support more than 6,500 jobs, with another 28,000 jobs across Australia's workforce.

BOX 1. GOOGLE'S DIGITAL FUTURE INITIATIVE

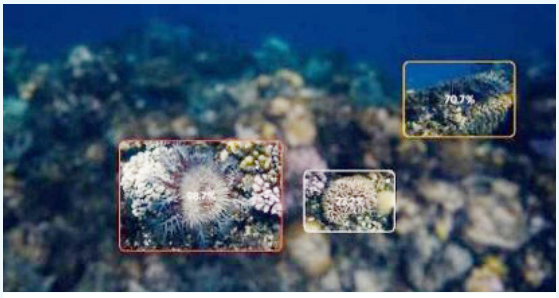
The launch of Google's Digital Future Initiative in Australia, 15 Nov 2021.

Google's Digital Future Initiative is the company's biggest single investment in its 20 years in Australia. Its goal is to help build a strong digital future for all Australians, focusing on three aspects – infrastructure, research, and partnerships.

Infrastructure. The company is heavily focused on building secure and robust local cloud computing infrastructure.[38] This investment enables digital transformation, making businesses more productive and responsive to ever-changing customer needs.

Research. Another key initiative is the launch of Google's first research hub in the country.[39] The Google Research Australia hub partners with the local research community and other global Google Research hubs to leverage AI and machine learning technologies to tackle key issues in Australia and globally. The hub will help cultivate emerging talent from leading universities by providing education and training, and create jobs in the country.[40]

Partnerships. Finally, the Digital Future Initiative supports technology partnerships that help solve some of the toughest challenges in Australia across a range of sectors including sustainability and health. As part of this, Google is partnering with the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Kaggle online data science community to help protect the Great Barrier Reef.[41] As a part of this partnership an AI model has been developed that helps conservationists identify and map outbreaks of the crown-of-thorns starfish, a major threat to the Great Barrier Reef. In addition to marine conservation, Google is working with the CSIRO on other critical issues such as energy and management of natural hazards.



AI model detecting crown-of-thorns-starfish.

2.2 Skilling and education initiatives

Google is committed to helping Australia build a robust digital future by supporting the skills development of workers across the country. For adult learners, more than 600,000 Australians have benefited from Grow with Google's free training and online tools, learning new digital marketing and data science skills in hopes of capturing better opportunities in the digital economy.[42] Google Career Certificates also help adult learners in Australia attain digital skills and micro-credentials needed to fill the technology roles in the economy. Since 2011, Google has contributed to the development of digital skills for teachers through its Google's Educator Professional Development Grants program, where more than 20,000 teachers have been trained to teach computer science-related concepts confidently.[43]

Besides helping adult learners develop digital skills for work, Google has also implemented several education programs to prepare the next generation of learners for the digital-centric future.[44] Google has worked with Australian Schools Plus to help students from disadvantaged backgrounds learn key problem-solving skills and equip teachers with professional development training in technology. The partnership has supported almost 2,000 students and 500 teachers in Tasmania, South Australia, Western Australia, Queensland and New South Wales.[45] In addition, the Google Cloud Career Readiness Program was developed to equip tertiary students with cloud computing fundamentals and skills in data analytics.[46] During the COVID-19 pandemic, Google Classroom also enhanced the quality of education by ensuring that learning could continue despite disruptions to physical lessons.[47] The equivalent of nearly 20 years of learning was conducted daily by teachers and students in Australia via Google Meet in the second term of 2020.[48] These skilling and education programs were developed to help both students and adult learners develop future-ready digital skills, with the aim of reducing digital skills shortages in Australia.

Google presenting to Mackay State High School students as a part of the Australian Schools Plus partnership.

2.3 Cybersecurity initiatives

Google's cybersecurity initiatives continuously strive to protect its users and keep them safe online in Australia and globally. For example, over five billion devices worldwide are protected by Google Safe Browsing. Anyone using Google products (e.g., Search or Ads) is immediately notified if they attempt to access a dangerous site or download suspicious files.[49] Google also provides an enhanced protection feature on Google Safe Browsing, which automatically warns users of leaked passwords and inspects the safety of downloads, helping SMBs and large enterprises protect themselves and their customers.[50] In addition, every day, Gmail blocks more than 100 million scam and spam emails from the inboxes of users.[51] This was especially critical during the pandemic, where bad actors would impersonate representatives from government organisations to solicit donations or distribute malware.[52]

Moreover, in September 2022, Google formally acquired Mandiant, a leader in dynamic cyber defence, threat intelligence, and incident response services. With this acquisition, Google Cloud and Mandiant will be home to a diverse suite of complimentary, end-to-end security operations offerings with even greater capabilities to support customers across their cloud and on-premise environments.[53]

Furthermore, Google's products such as Drive, Photos, Docs, and Sheets run on cloud infrastructure that is secure-by-design and has built-in protection features.[54] The global network that Google operates on protects

the information, identities, applications, and devices of its users.[55] The cloud provides a secure environment, especially where sensitive data with high security requirements is managed. A recent study conducted by Baker McKenzie with over 500 businesses globally has found that improved security is highlighted as one of the top benefits of using the cloud, second only to the lower costs of operations.[56]

2.4 Sustainability and disaster preparedness initiatives

Google has announced ambitious goals for sustainability. The company has been carbon neutral since 2007 and has announced a goal to run all Google data centres and offices 24/7 on carbon-free energy by 2030.[57] In addition, it aims to replenish 120% of water consumed by the company.[58] A circular economy strategy has also been developed to reduce waste in its data centres and offices, and across the supply chain.[59]

Additionally, green initiatives and platforms are launched by Google to support the country's sustainability goals. Examples include:

- The Environmental Insights Explorer (EIE), an online platform, was developed to help cities reduce carbon emissions. The EIE provides building and transportation emissions, as well as solar potential analysis, to make it easier for cities to measure progress against their climate action plans.[60] Data access has been expanded to thousands of cities worldwide, including to 100 councils in Australia.

- Google Flights enables individuals to make more sustainable choices by allowing them to see which flights have the lowest carbon emissions.[61]

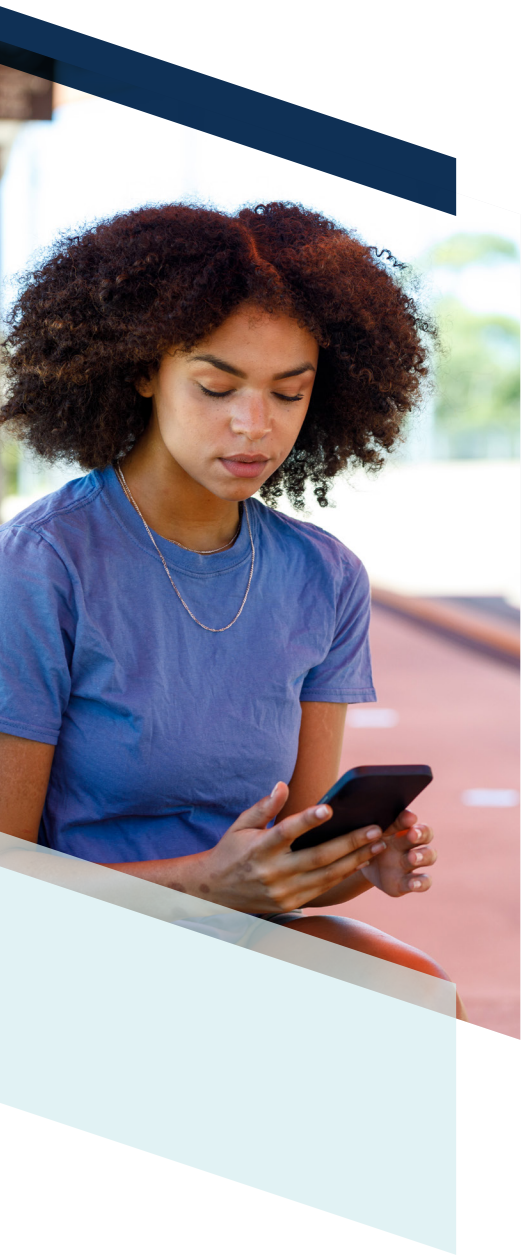
- A new eco-routing feature on Google Maps will be launching soon in Australia, encouraging Australians to choose the routes that generate the lowest carbon emissions.[62] The application uses traffic, physical slopes, and fuel efficiency data to calculate which routes require the lowest carbon footprint and set it as the default option for users, promoting more sustainable habits amongst Australians.[63]

- Google's investment in cloud technologies also contributes to the country's sustainability efforts, with the launch of its second cloud infrastructure region in Melbourne.[64] A report by Deloitte in 2022 estimates that cloud-based solutions are, on average, five times more energy-efficient than on-premises data centres in the Asia Pacific.[65] If all Australian organisations still not on cloud storage convert into cloud users, there would be potential savings of 4.5 million tonnes in carbon emissions a year or an equivalent of $1 billion in energy costs.[66]

In addition to these sustainability initiatives, Google has supported using digital technologies for disaster detection and recovery. Over the next decade, natural disasters are expected to be more frequent with more severe economic impacts. Therefore, Google has developed several programs to help mitigate these major socioeconomic impacts on the country. For example, a $1.4 million grant from Google.org has enabled researchers from the University of Queensland to use AI for real-time predictions of bushfire hazards and alert locations up to 30 kilometres from the fire front about impending fires.[67] In addition, Google.org, World Wildlife Fund (WWF), and Conservation International launched 'Eyes on Recovery' and are working together to facilitate wildlife recovery in the aftermath of Australia's recent bushfires.[68] Researchers can now use Wildlife Insights, a platform powered by Google's AI technology, to keep track of fauna recovery across various locations in real-time. Furthermore, Google actively seeks to improve its products by helping the community stay safe and prepared for disasters. A new bushfire feature, for instance, was recently introduced on Google Maps, enabling users to access official up-to-date details on fires so that they can make quick and informed decisions in times of emergency.[69] These initiatives have supported efforts on disaster recovery, allowing Australia to be more prepared to tackle future disaster events.

03

AUSTRALIAN BUSINESSES AND CONSUMERS BENEFIT FROM USING GOOGLE'S PRODUCTS



3.1 Consumers in Australia enjoy $19.5 billion worth of annual benefits by using Google's products, with an average Internet user deriving $763 of value annually

Google's products bring convenience to Australian consumers. **Google Search** offers access to online information from around the world that facilitates many aspects of their everyday life, including work, education, self-enrichment, shopping, and entertainment. **Google Maps** simplifies travel by suggesting the quickest, most convenient routes when users walk, cycle, drive, use a ride-sharing app, or take public transport. Australians also have access to over two million apps through **Google Play**, putting a wide variety of digital tools and entertainment options at their disposal. Finally, consumers can leverage cloud-based storage solutions and real-time collaborative tools for their personal and work needs through Google's products such as **Drive, Photos, Docs, and Sheets**.

As many of these products are available for free, putting a value on their economic benefits is challenging. So instead, consumers were asked how much they would value the Google services if they were no longer free (otherwise known as consumer surplus) – and this 'willingness to pay' is used as a proxy for the value of consumer benefits. Considering the benefits each product brings to individuals, the total value consumers place on Google's products (including Search, Play, Maps, Drive, Photos, Docs, and Sheets) is estimated to be **$19.5 billion** annually (Exhibit 1) - an average of $763 a year per Internet user from using Google's products.

Additionally, Google delivers time savings in consumers' daily lives. Compared to searching for the same information offline, Google Search saves Australians an estimated 4.8 days - or 115 hours - per year that can be used for other activities.

EXHIBIT 1

Google delivers $19.5 billion worth of annual consumer benefits to individuals in Australia

Product	Examples of benefits	Estimated annual consumer surplus
Google Search	Ease of access to information for research, self-enrichment, shopping, and entertainment	$7.3 billion
Google Maps	Increased convenience during commutes	$6.3 billion
Google Play	Access to digital tools and apps for entertainment and productivity	$3.2 billion
Google Drive, Photos, Docs and Sheets	Increased productivity from online storage and real-time collaboration tools	$2.6 billion
	Total annual consumer benefits in Australia :	**$19.5 billion**

Note: Figures are estimated based on latest available annual data (i.e., in 2022, or where unavailable, recent data spanning a 12-month period between 2021 and 2022). Figures may not sum to 100% due to rounding.
SOURCE: AlphaBeta-Access Partnership analysis

3.2 Google's products provide $47.1 billion in value to Australian businesses annually

Through Google Ads, AdSense, Play, Ad Grants, Search, Maps, and Cloud, Australian businesses gain **$47.1 billion** worth of economic value annually.[70] These products support businesses in two broad ways: (i) facilitate business expansion and revenue growth in domestic and international markets; and (ii) promote efficiency gains.

Google's products enable Australian businesses to increase revenues and expand their reach to address both domestic and international demand. Google Ads helps Australian businesses engage online audiences globally and have provided advertising benefits of $42.5 billion to businesses annually. Through AdSense, Australian businesses benefit from displaying advertisements on Google's network of websites, blogs, and forums, providing an annual benefit of $91 million. Content creators such as bloggers and writers can also monetise their online space on these networks of websites and generate an annual income of $289 million from AdSense. Furthermore, the global reach of **Google Play** (over 2.5 billion active Android devices globally) helps app developers in Australia generate an annual income of around $2 billion from domestic and international customers. Additionally, through **Ad Grants**, Google has supported eligible not-for-profit organisations with in-kind Google ads worth over $74 million annually.[71] Ad Grants recipients can leverage ads on Google Search result pages to promote their organisations, recruit volunteers, attract donors, and more.

The use of Google's products has also resulted in efficiency gains for Australian businesses. By searching for information online through **Google Search**, employees can leverage a wide range of online information, saving an average of 52 hours (or 2.2 days) annually per employee. With **Google Maps**, businesses can optimise their work-related journeys to save time, equivalent to about $1.8 billion annually. In addition, **Google Cloud** tools such as Google Workspace and Google Cloud Platform (GCP) provide businesses with the ability to conduct real-time collaboration and leverage Google's AI and machine learning capabilities, resulting in benefits of around $345 million a year.[72]

Notably, non-IMT sectors, such as professional services and construction, derive the largest share of business benefits from Google's products and services. Professional services sectors such as the financial and insurance sectors derive the largest benefits of approximately $15.6 billion.[73]

BOX 2. GROSS BUSINESS BENEFITS OF GOOGLE CLOUD HAVE INCREASED OVER TIME

In 2021, AlphaBeta estimated the economic value of Google Cloud in Australia. In that report, the gross benefits of Google Cloud were reported.[74] In comparison, this year's report valued the net benefits of Google Cloud, which accounts for the implementation costs. Therefore, for a fair comparison of benefits across the years, the net benefits of Google Cloud in 2022 were converted to gross benefits to compare the changes in benefits after one year. Google Cloud has enabled Australian businesses to derive an increase of 33% in gross benefits compared to a year ago (Exhibit 2).

EXHIBIT 2

Looking at gross benefits, there is an estimated 33% increase in economic benefits Google Cloud provides in Australia

Category	2021	2022	% change
Annual business benefits	**$686 million**	**$914 million**	**+33%**
- Business benefits of Google Workspace	$411 million	$456 million	+11%
- Business benefits of Google Cloud Platform	$275 million	$458 million	+67%

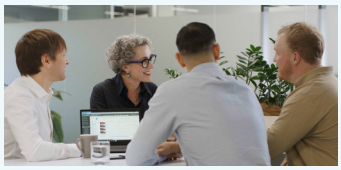
SOURCE: AlphaBeta-Access Partnership analysis

BOX 3. GOOGLE WORKSPACE FACILITATES COLLABORATION FOR CANVA'S GLOBAL TEAM

> *We expect Google Workspace to continue to play a key role in our operations and in supporting an increasingly international workforce.*[75]
>
> **- Jeff Lai, Internal Infrastructure Specialist, Canva**

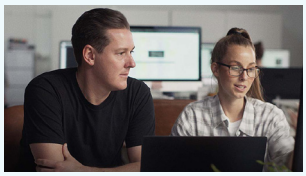
Canva is an Australian-based visual communications platform with a team of over 3,000 globally. Given Canva's increasingly distributed workforce, it was important that any technology used would enhance existing connectivity and support productivity needs. By leveraging Google Workspace, Canva ensures that these needs are met. The company achieves near-100% availability across its global workforce and deploys productivity initiatives such as a meeting-free day each week.[76] Google Workspace applications have also supported Canva's digital security and feedback-focused culture through its collaboration tools.[77]

BOX 4. HELPING AUSTRALIAN BUSINESSES SCALE THROUGH GOOGLE ADS



> *Google Ads is definitely our most profitable marketing channel.*
>
> - Duncan Jones, Head of Marketing, Cluey

Cluey is a personalised online tutoring platform aimed at helping students based in Australia and New Zealand.[78] By leveraging Google Ads, Cluey is able to effectively reach customers that are actively searching for the company's tailored services, including tutoring for students with special learning needs. For every $1 the company invests in Google Ads, it generates $5 of revenue, allowing Cluey to reinvest into the business and serve more students. With the help of Google Ads, over the past three years Cluey has been able to grow its student base from 300 to over 20,000 students, and now onboards the equivalent of an entire school of new students every month.



> *We wouldn't be here without using Google Ads. I was blown away by the results. Today, it's a fundamental part of our business. It's helped us scale massively. So, I'd definitely recommend it.*[79]
>
> - Dane Walker, Chief Marketing Officer, Princess Polly

Princess Polly is an e-commerce fashion retailer founded on the Gold Coast in 2010. To capture greater market share in the fashion industry, Princess Polly started using Google Ads. Running Search and Shopping Campaigns, the results far exceeded the company's expectations, delivering a return on investment (ROI) of 20:1. Since then, Google Ads has driven 51% of the company's performance ad revenue and helped it grow from an Australian start-up into an international New York Stock Exchange (NYSE) listed success, employing over 380 staff and shipping products all over the world.[80]

> *Google Ads has allowed Who Gives A Crap to bring in hundreds of thousands of orders across the world in the last 12 months - a 5.4% growth from the previous 12 months! These milestones help us to bring us closer to our goal of giving everyone in the world access to clean water and toilets. To date, we've been able to donate over $10 million to clean water and sanitation not-for-profits and we're excited to see that number grow!*
>
> - Jenna Tanenbaum, Head of Direct-to-Consumer Commerce, Who Gives A Crap

Who Gives A Crap is a B Corp™ certified business, dedicated to improving sanitation in developing countries. Since its founding, the company has donated 50% of its profits to underserved communities to ensure that everyone in the world has access to clean water and toilets.[81] To date, Who Gives A Crap has donated over $10.8 million to clean water and sanitation not-for-profits globally.[82]

All of their products are plastic free, made with sustainable materials and delivered to nearly 40 countries with complimentary carbon neutral shipping. During the COVID-19 pandemic, the company used Google Ads to offer users a critical business-to-consumer (B2C) solution, resulting in a significant increase in sales and enabling the company to donate more than $5.85 million of their pandemic profits to sanitation charities. By leveraging Google Ads, the company has seen over 20% increase in revenue and over 15% increase in average order value over the past 12 months. Who Gives A Crap was also able to successfully reach customers in new markets such as the Netherlands.

3.3 Google supports over 133,300 jobs and enables a further 186,500 jobs in the wider economy

Google is estimated to support **133,300** jobs among businesses in Australia that use its products and a further **186,500** jobs are enabled across the supply chains of these companies. For example, Google's advertising products would allow businesses to expand their customer bases and capture more demand, spurring the need for additional hiring. As these businesses ramp up production of their goods or services, the incremental demand for raw materials and supplies also boosts hiring in companies up the supply chain.

3.4 Small and medium-sized business in Australia receive a significant share of benefits delivered by Google's products

Google's products provide support to many SMBs in Australia. For instance, search advertising helps SMBs reach wider online audiences cost-effectively. Google Workspace also enables these smaller businesses to utilise cloud storage and real-time collaboration solutions to save on IT infrastructure costs while boosting productivity, compensating for their lack of scale. **61%** of this benefit to Australian businesses, or **$28.8 billion**, is attributable to SMBs (Exhibit 3). Out of the 133,300 jobs supported by Google, it is estimated that **65%** of these jobs, or **87,100**, are from SMBs.

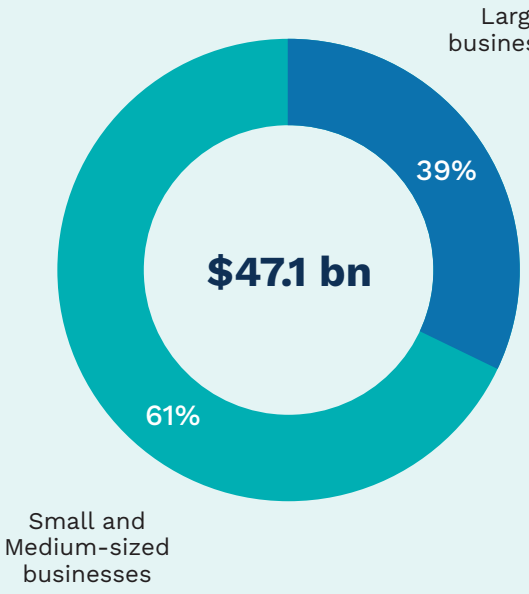
With the help of Google's products and initiatives, many companies, especially SMBs, in Australia have enhanced their economic resilience. Through the Grow with Google initiative, businesses have gained access to digital skilling training and certification programs, enabling them to remain relevant and adaptable in the digital age. For example, more than 40,000 Australian SMBs have benefited from digital skilling training under Grow with Google during the pandemic.[83]

Another Google product that has been helpful to Australian businesses is the Google Business Profile platform, which allows businesses to take ownership over how their business appears on Google Search and Maps.[84] Google Business Profile, alongside other Google products, is instrumental in businesses' online visibility, allowing them to attract new consumers as they begin their online journey. During the peak of the COVID-19 pandemic, businesses were able to keep their customers up to date on the latest promotions or safety measures with this platform, enabling them to keep their operations open and afloat.[85] In total, **Google's products have enabled over 1.6 million Australian businesses to connect with their customers** through calls, messages, bookings, and more.[86]

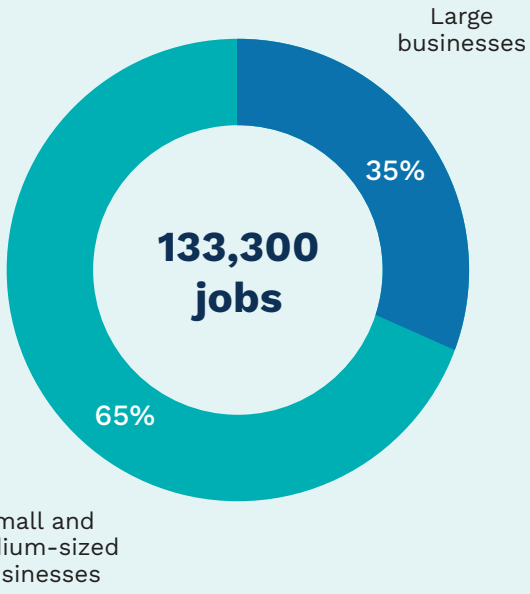
EXHIBIT 3

Small and medium-sized businesses are key beneficiaries of Google's products and services

Breakdown of annual business benefits from Google's products, by business size



Breakdown of annual jobs supported by Google, by business size



Note: Figures are estimated based on latest available annual data (i.e., in 2022, or where unavailable, recent data spanning a 12-month period between 2021 and 2022). Figures may not sum to 100% due to rounding.
SOURCE: AlphaBeta-Access Partnership analysis

BOX 5. SMBS USE GOOGLE TOOLS TO SCALE THEIR OPERATIONS

> *As a small business, the tools and initiatives that Google offers have definitely assisted us in both establishing and growing our business. We were able to quickly gain traction within the industry by using Google Ads and Google Business Profile, with most of our customers finding us after reading our positive Google reviews online.*
>
> – Kellie McPhail, Director, Beauty & Beast

Beauty & Beast is a Western Australia-based business providing vehicle protection and enhancement services, such as paint protection, interior protection, window tinting, wheel coatings, glass coatings, and paint correction. Since beginning its operations in 2019, the company has quickly become a popular choice in vehicle protection across Perth. By focusing its marketing budget on Google Ads, Beauty & Beast was able to scale quickly and reach new customers in a short period of time. The company has seen astounding returns, with over 90% of its revenue being generated through Google Ads. In addition, Beauty & Beast leveraged Google Business Profile to grow its business. As the company has established a stellar reputation for its consistently good service, it has achieved over 170 5-star Google reviews to date. This had a significant influence on their customers' purchasing decisions, with a majority of them stating that the positive reviews online were a big factor in their decision to use the company's services.

> *Google has been our primary source of lead generation from the beginning. A couple of years ago, we actually had to turn our Google Ads campaign off as we did not have sufficient staff to handle the overwhelming number of enquiries. Without Google, we would not exist. It's that simple!*
>
> – Mark Smith, Director, Complete Doors Sydney

Complete Doors Sydney is an Australian company largely focused on the supply and installation of doors for residential homes. The company has built a reputation for its reliability and efficiency as a partner by prioritising customer satisfaction. Despite facing fierce industry competition, the company utilises digital tools such as Google Ads and Google Business Profile to build awareness of its product offerings and effectively engage with its customers. By using Google Ads, the company saw revenue growth of 25% per annum for six consecutive years. The company has been successfully delivering premium quality products at affordable rates, and this is evident in its average Google Rating of 4.9 out of 5 given by over 150 customers.

> *The use of Google Business Profile has shown a real positive impact on the growth of my salon. With Google Business Profile, customers can now easily access information about my business and gain a better understanding of our brand and culture.*
>
> – Emma Duncan, Founder, Halo Hair Collective

Halo Hair Collective is a certified sustainable salon based in Adelaide, South Australia. It provides a wide range of services, including professional styling, haircuts, treatments, and colouring services.[87] As an active user of Google Business Profile, Halo Hair Collective was able to market its business successfully. Its website traffic has increased substantially in the past year, with an increase of over 20% observed over three months. In addition, the decision to embed Google customer reviews on its website has proven to be beneficial for attracting new customers to the salon. With over 150 5-star Google reviews to date, Halo Hair Collective has been able to market its outstanding services to new customers.

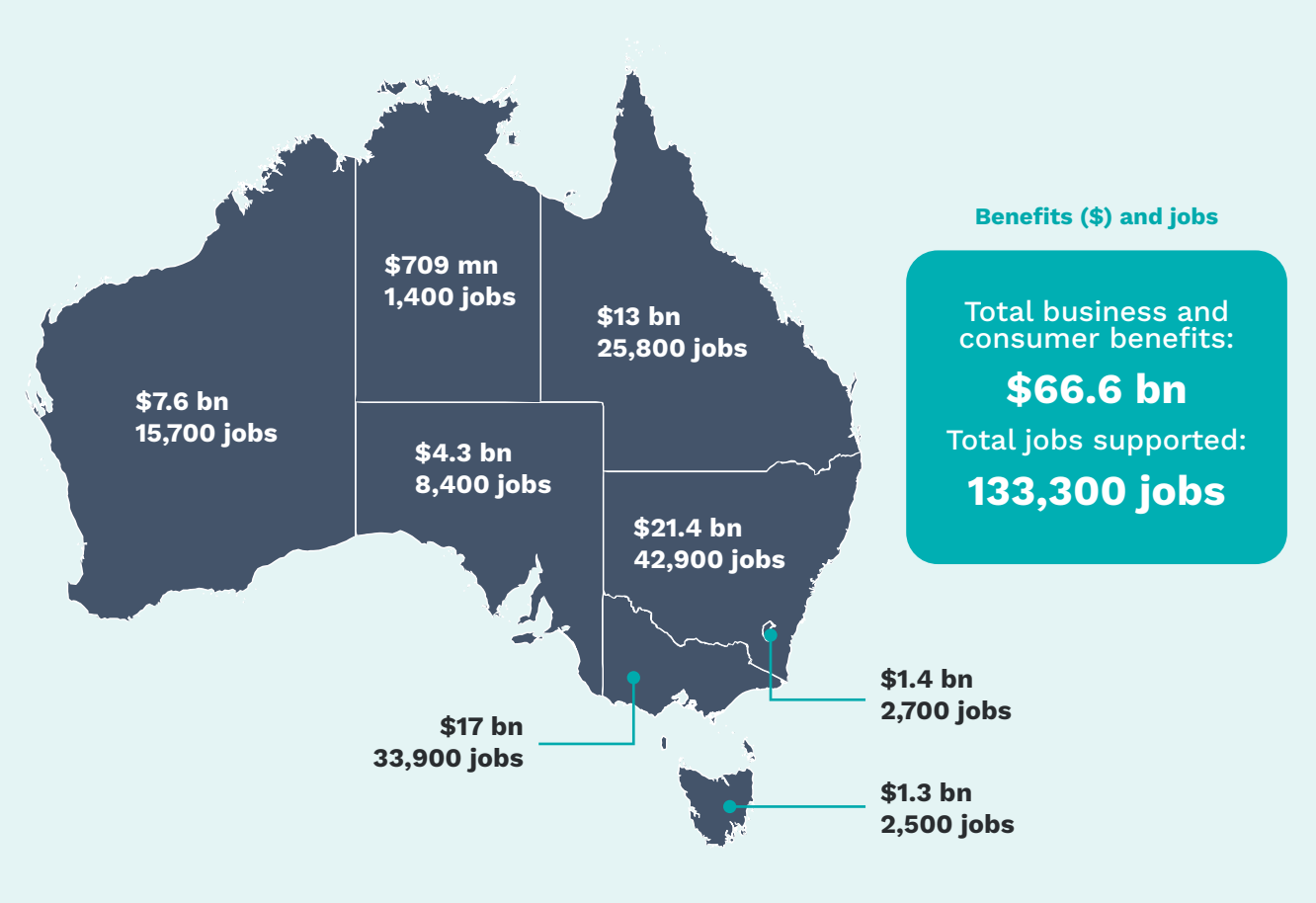
APPENDIX

A: Economic benefits across states and territories in Australia

Businesses and consumers across every state and territory in Australia benefit from Google's products, with benefits ranging from $709 million in Northern Territory to $21.4 billion in New South Wales, as shown in Exhibit A1.

EXHIBIT A1

Businesses and consumers across every state and territory in Australia benefit from Google's products



Note: Figures are estimated based on latest available annual data (i.e., in 2022, or where unavailable, recent data spanning a 12-month period between 2021 and 2022). Figures may not sum to 100% due to rounding.
SOURCE: AlphaBeta-Access Partnership analysis

B: Methodology

B1. Estimating the economic benefits of digital technologies in mitigating societal challenges in Australia

This report estimated the annual economic benefits of digital technologies in mitigating three societal challenges in the year 2030: digital skills shortages, cybersecurity risks, and climate change and natural disasters. The analysis was conducted for the year 2030 to ensure that there is a sufficient runway for Australia to increase its digital adoption rates and fulfil its potential as a leading digital economy.

For digital skills shortages, the economic benefits of technology in addressing this challenge were estimated based on the relationships between technology applications (i.e., personalised learning, digital job platforms and career matching services, and online retraining programs) and employment outcomes (i.e., labour productivity).[88] For cybersecurity risks, the economic benefits of technology in addressing this challenge were estimated for businesses and consumers. For businesses, this is derived from the expected cost savings from deploying AI in cybersecurity, assuming that all businesses which are not deploying AI today will deploy them in 2030.[89] For consumers, the benefits were estimated by assuming that consumers who are not currently aware of good cybersecurity practices will adopt them in 2030, thereby reducing the key risks faced from cybercrimes.[90] For climate change and natural disasters, the methodology developed by Professor Ilan Noy was adopted and the potential human and infrastructure costs of disasters were estimated.[91] Using historical data from 1979 from the Emergency Events Database (EM-DAT), the five-year average annual growth rate for the number of natural disasters, deaths, and affected people, as well as property damage costs per natural disaster, were calculated and forecasted to the year 2030.[92] After establishing the relationships between various technology applications and emergency response times, the economic benefits of technology in addressing this challenge were estimated.[93]

B2. Estimating Google's total economic benefits for consumers in Australia

The consumer benefits supported by Google are challenging to measure and calculate as individuals typically do not pay for using free products such as Google Search or Maps. In the absence of price indicators, we adopted the economic 'willingness to pay' principle to estimate the value of consumer benefits by asking individuals how much they value specific services – also known as consumer surplus. Consumer surplus for Google Search, Maps, Play, Drive, Photos, Docs, and Sheets was estimated by multiplying the number of users by the willingness to pay for each Google product.[94] We also calculated the time savings accrued to consumers from their use of Google Maps (which optimises their journeys) and Google Search (which increases the efficiency of information gathering). Time savings from Search was estimated by applying time-saving estimates from an experiment that measured the time taken to search online versus a search at the library.[95] The time saved per user by using Google Maps was estimated by calculating the difference in kilometres driven by consumers using Google Maps relative to a counterfactual where consumers are assumed to have access to GPS technology.[96] In this report, the estimates of Google's total economic benefits for consumers are based on the latest available data (i.e., in 2022, or where unavailable, recent data spanning a 12-month period between 2021 and 2022).

Breakdown of consumer benefits by state and territory

This was estimated based on the average value of two metrics: (i) final demand by state and territory; and (ii) population by state and territory.[97]

B3. Estimating Google's total economic benefits for businesses in Australia

To estimate the business benefits, the economic value generated by businesses that used Google's

products was calculated. These are in the form of increased revenue, improved productivity, and time savings. The Google products included in this analysis of business benefits include Google Search, Ads, AdSense, Maps, Play, and Cloud. These benefits 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. These benefits also do not account for the activity that may have been displaced by Google, nor attempt to estimate the incremental impact of Google on the Australian economy beyond what would be the case if Google did not exist but other companies like it did. In this report, the estimates of Google's total economic benefits for businesses are based on the latest available data (i.e., in 2022, or where unavailable, recent data spanning a 12-month period between 2021 and 2022).

Business benefits from Google Search, Ads, and AdSense were calculated by multiplying estimated business expenditure on these products by a profit multiplier. We assume that businesses receive $8 in profit through Google Search and Ads for every $1 a business spends on Google Ads and assume a separate multiplier for display advertising based on academic literature.[98] The benefits that Australian businesses derived from Google Maps were estimated by calculating the difference in the value of time saved by businesses using Google Maps relative to a counterfactual scenario where businesses are assumed to have access to Global Positioning System (GPS) technology.[99] To estimate the revenue earned by app developers in Australia through Google Play globally, we estimated the revenue from global consumer spending attributable to Australian app developers, scaling up to include advertising and other revenue sources.[100] Business benefits from Google Cloud include benefits that come from the use of Google Workspace and the Google Cloud Platform (GCP). The benefits were estimated by assuming a net benefit of 76% on Google Workspace and 48% on GCP for every dollar spent on each service by Australian businesses.[101]

The business benefits from Google Cloud in this report differ from those reported in the 2021 report because, in this report, the business benefits were presented as *net* benefits, while in the 2021 report, it was presented as *gross* benefits. The *gross* benefits were calculated by applying a ratio of 176% to the total annual expenditure on Google Workspace and 148% to the total annual expenditure on GCP in Australia. This ratio assumes that every dollar spent on each product generates a *gross* return of that figure (i.e., every $1 spent on Google Workspace returns $1.76 to the business). The *net* benefit for this year's report can be converted to *gross* benefits by using both ratios.

The total number of jobs supported by Australian businesses from the use of Google's advertising products was estimated in this report.[102] The number of jobs supported by Google was computed based on two metrics: 1) average revenue per worker by business size; and 2) average output per worker by business size.[103] To estimate the number of jobs enabled by Google in the wider economy, the total number of jobs supported by Google was multiplied by a direct-indirect job ratio.[104]

Breakdown of business benefits and job impact by state and territory

This was estimated through an average of various metrics, including the final national demand, population, GDP, and the number of businesses by state and territory.[105]

Breakdown of business benefits by business size

This was estimated based on businesses' share of total Internet income in Australia by business size.[106] The business size is determined based on the number of employees in the business.[107]

Breakdown of business benefits by sector

This was calculated based on the share of businesses using digital products or services in each sector.[108]

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71. Ad Grants data has been provided by Google. Apart from this data, all other estimates derived in this report were based on non-Google proprietary and publicly available information.

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91. The economic impact estimated in this study is smaller compared to the Australian Business Roundtable for Disaster Resilience and Safer Communities study because of two reasons. Firstly, we only estimated the insured costs of natural disasters as there were

no robust and reliable data sources allowing for the accurate estimation of uninsured costs. Secondly, the intangible impacts of mortality and morbidity was not quantified as the scope of analysis was limited to the direct impact of natural disasters on lives. Ilan N. (2015) "A Global Comprehensive Measure of the Impact of Natural Hazards and Disasters". Global Policy, Vol. 7, No. 1, pp. 56-65.

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102. The underlying principle is that businesses gain increased revenue as they market their goods and services more effectively through the use of Google's products. When their businesses expand, they will need to hire more employees to support the increased demand. This includes "spillover jobs" such as new jobs that get created in the supply chain - e.g., supplier companies that also require hiring more as they sell an increased level of raw materials or component services to these businesses.

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