



Consumer Data Revolution:
Empowering Australia's Future

March 2024

Executive summary

What the Consumer Data Right means for consumers and business

Australia's Consumer Data Right (CDR) is a legislative, regulatory and standards framework aimed at giving consumers more control over their personal data. Under the CDR, consumers have the right to securely access and share their data with trusted third parties – such as businesses or service providers – helping consumers make more informed decisions about products and services.

For businesses, it means complying with regulations and providing consumers with access to their data on request. The CDR's aims are to promote competition, innovation and transparency in the market by empowering consumers and fostering a more level playing field for businesses.

How it's progressing

The CDR roll out was planned as a phased process, with the framework applied to different sectors of the Australian economy over time. It was first rolled out in the banking sector in July 2019, then the energy sector in October 2022.

The CDR has had mixed success. It's enabled data sharing in banking and energy, but there has been **low consumer adoption, slow expansion and limited business innovation**. As a result, the government has paused its expansion to other sectors, instead focusing on improving data quality, deepening participation in existing sectors, strengthening cyber security and improving awareness.

This report lays out an alternate path forward for the CDR to reach its aims and maximise consumer and economic benefit.

To comply with the CDR, businesses need to:

- Set up systems and processes to securely share consumer data with trusted service providers
- Obtain explicit consent from consumers before sharing their data
- Implement strong security measures to protect consumer data
- Follow technical standards and rules set by the CDR regulatory body
- Participate in the accreditation process if they want to be data recipients or holders.

It's important to consult legal and compliance experts for industry-specific requirements.

Consumers leave a large data footprint in the economy, estimated at close to 48,000 petabytes in 2023. This is equivalent to every Australian taking and storing around 2,670 photos each day for a year on their phones (assuming a typical smartphone photo takes up around 2MB storage). Consumer data is regularly shared between some businesses but mostly not within the CDR framework.

Banking and energy accounts for only 4% of total consumer data in Australia. This indicates there's potentially more value to be captured by expanding the CDR, rather than deepening scope in banking and energy.

What's next?

So, what should the focus of the CDR roll out be? Our data holding analysis shows **software and information services businesses in the technology sector hold the most volume of data, close to 28.5k petabytes** – around 59% of total consumer data stored in Australia each year.

Consumer data, such as name and date of birth, is collected by many industries, though only a few are the authoritative primary sources of this data*. Delving deeper to map the consumer data types across businesses within each sector shows public administration and safety (i.e., federal, state and local government and agencies) and information, media & telecommunications capture the widest variety of consumer data types and are leading primary sources. Prioritising data from these sectors as part of a new approach to the roll out of the CDR can enable further value to be unlocked.

A consumer-first approach

To fully leverage CDR's potential, it's important to shift from a sector-based approach to a consumer-centric perspective and consider when people would most benefit from it. Key life goals and events – such as starting a family, pursuing education, or recovering from a natural disaster – are crucial moments when important decisions are made. Access to digital services backed by valuable cross-sector data powered by the CDR would help people make well-informed choices. So, prioritising the inclusion of cross-sector data sets in the CDR will deliver the highest value for consumers.

Designing the CDR around consumer life objectives will transform how people engage with businesses. By eliminating the need to repeatedly input identical information across various businesses, processes are streamlined and consumer effort is reduced. This enhances efficiency and convenience, saving valuable time and minimising frustration. As a result, individuals can prioritise more significant aspects of their lives. Currently, the CDR has a limited consumer value proposition as it only focuses on banking and energy sectors, but **cross-sector data sharing is key to increasing consumer interest.**

Cross-sector data sharing is key

Cross-sector data sharing gives businesses access to a wider range of consumer data, across both public and private sectors, which will provide a clearer understanding of consumer needs. Businesses can then deliver products and services more relevant and targeted to consumers. Over time, this accelerates business innovation which ultimately benefits consumers.

Factors such as security, privacy and control will influence how consumers see the value and ease of using the CDR. As a result, the redesign of the CDR to enable cross-sector data sharing will need to address these factors to promote more positive consumer perceptions and confidence.

59% of total consumer data stored in Australia each year is **held by software and information services businesses in the technology sector.**

The widest variety of data in Australia is held by federal, state and local **government** and agencies, and **information, media & telecommunications.**

*Authoritative primary data sources – *Reliable and trustworthy sources that provide original and firsthand information. They're typically the original creators or collectors of the data.*

The CDR's impact could be far reaching. Enabling cross-sector data sharing will produce economic and societal benefits for Australia, through greater **competition and innovation**, stimulating an uplift in **business productivity**.

The Australian economy would be \$16.7 billion larger by 2043 if the CDR expands beyond banking and energy sectors. Further, approximately 46,800 additional jobs can be expected by 2043 from the combined effect of greater competition and innovation by enabling cross-sector data sharing.

Outside of these macroeconomic benefits, a CDR which allows cross-sector data sharing will have broader societal benefits. These include improved social and health outcomes for consumers, as well as enabling consumers to make better informed decisions for complex life events and issues.

An additional...

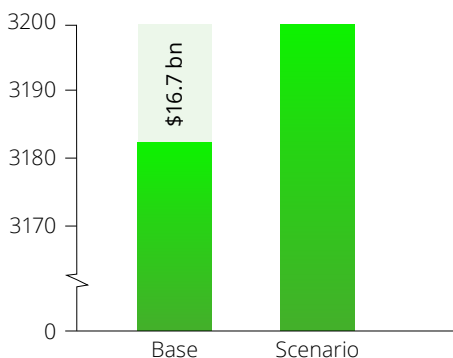
\$16.7 billion

(in real terms) in economic growth and...

46,790

full time equivalent jobs annually by 2043 are expected if the CDR expands beyond banking and energy sectors.

Estimated real GDP (AU\$ billions) in 2043



Source: Deloitte Access Economics

Recommendations

Australia can learn from the experience of implementing the CDR to date. To maximise economic potential, the CDR must move at pace to deliver tangible consumer value and incentivise businesses to accredit and innovate.

To shift course, policymakers can explore the following:

- **Incentivise consumers**
Focus on building consumer awareness, interest, confidence, and eventual adoption of the CDR.
- **Make room to innovate**
Reduce regulatory burden, create innovation incentives and empower industry to lead innovation challenges rather than relying on government to define the innovation path forward.
- **Government to lead the way**
Inspire industry and international interest in the CDR by integrating government data sets and establishing Australia as an open data leader.

Design principles for the next phase of CDR's evolution should include speed, value and trust as well as being grounded in consumer life objectives and events and increasing incentives for business.

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Chapter 1

Consumer Data Right context

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- Since its launch in 2019, the CDR has enabled consumer data sharing in banking and energy to empower consumers and stimulate competition and innovation across these sectors
 - However, the CDR has not entirely met its ambitions with low consumer adoption, limited business innovation and slow expansion
 - In this context, policymakers have paused the expansion of the CDR into new industries, instead focusing immediately on improving data quality and deepening participation in existing sectors, improving cyber security and expanding awareness
 - \$88.8 million in funding has been committed to the future of the CDR in the 2023-24 Budget (for pausing per the above and exploring action initiation)
 - Australia's existing digital economy capabilities (e.g., NPP, NBN, 5G) are a foundation for success, and enable us to be world leading, if the CDR can move toward its stated aims.
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We will undertake a strategic assessment at the end of 2024. Further developments and further expansions will be considered as part of that process, but not before.

The Hon Stephen Jones MP, Address to the Committee for Economic Development of Australia, 7 June 2023



The Consumer Data Right (CDR) has attempted to put Australian consumers in charge of their data with the promise of ‘levelling the playing field’ and ‘fuelling innovation’.

Ambitious beginnings, four years young

The Productivity Commission’s inquiry investigated how to improve consumer data availability and use, providing the motivation for the CDR. In 2019, the CDR was legislated to protect consumer data rights and responsibilities.

Banking and energy have been first “off the block”

Under the watch of the Australian Competition and Consumer Commission (ACCC) and the Office of the Australian Information Commissioner (OAIC), the CDR has been rolled out with a sector-based approach. Banking (2020) and energy (2022) have been the initial focus for the CDR to improve competition in sectors with low competition, though the innovation opportunities across the economy are much broader.

Australia’s approach isn’t limited to a sector

Other jurisdictions have taken a sector-by-sector regime approach while Australia has set an ambition for economy-wide data sharing.

There have been obstacles along the way

In practice the CDR is inching toward this ambition, hindered by:

- Low consumer adoption
- Limited business innovation empowered by the CDR
- Slow expansion into other sectors.

Data rights and responsibilities are front of mind

Recent cyber security breaches have brought into question the risk-to-reward framework that consumers use when sharing their data with businesses.



- May 2017**
A public inquiry by the Productivity Commission investigates ways to improve the availability and use of public and private sector data.
- July 2019**
Australia's major banks publicly release standardised product reference data (e.g., interest rates, fees, and charges etc.) beginning the era of Open Banking.
- July 2020**
CDR is launched, with Phase 1 enabling customers of the major banks to share data from their everyday banking accounts, such as savings accounts and term deposits.
- November 2020**
Major banks' customer data sets available via the CDR expanded to Phase 2, being home loans, personal loans, joint accounts, direct debits and payees etc.
- February 2021**
Expansion to Phase 3 for major banks including overdrafts and business finance.
- May 2021**
The Federal Government's Digital Economy strategy earmarks an additional \$111.3 million to expedite the Consumer Data Right (CDR) rollout.
- July 2021**
Rollout of Phase 1 data expands to non-major banks.
- November 2021**
Rollout of Phase 2 data expands to non-major banks.
- February 2022**
Customers of non-major banks can share all banking data, including information on overdrafts and business finance, known as Phase 3 data.

June 2022
Rollout commenced for PayTo, a digital payment solution that allows customers to authorise payments initiated by third parties. The solution can deliver to the vision of the CDR and help banks meet obligations to deliver payment initiation.

October 2022
Energy sector product information begins to be shared.

November 2022
Data sharing begins in energy (Australian Energy Market Operator, AGL Energy Group, Origin Energy Group, and Energy Australia Group) and the [Treasury Laws Amendment \(Consumer Data Right\) Bill 2022](#) is introduced into Parliament, seeking to pave the way for action initiation.

May 2023
Australian Government announces \$88.8 million over two years from 2023–24 for CDR across banking, energy and non-bank lending sectors. The funding is also to progress design of action initiation and cyber security improvements.

June 2023
Australian Government releases a statement in response to the Statutory Review of the Consumer Data Right, outlining commitment to continue developing the CDR framework. PayTo is now available across all major banks.



While the CDR has enabled data sharing in banking and energy, its rollout has been stalled by low adoption, slow expansion and an innovation culture that has yet to reach its full potential.

CDR Objectives			
Intent	1 Putting the consumer in control of their data	2 Fuelling competition and productivity	3 Setting the standards for consent and privacy
	<p>Data portability – Enhance the ability for consumers to securely transfer their data to accredited service providers.</p> <p>Consumer empowerment – Empower consumers to have control and choice regarding their consent for the sharing of their data on demand at any time.</p> <p>Transparency – Increase transparency around the use of consumer data, fostering trust between consumers and service providers.</p>	<p>Increase competition – Encourage competition between service providers by reducing barriers to switching and enabling new entrants.</p> <p>Encourage innovation – Drive innovation in data-related services and products, leading to better options for consumers.</p> <p>Sector standardisation – Establish industry-wide standards for data transfer, facilitating interoperability and ease of data sharing.</p>	<p>Standards for consent and privacy management – Establish common standards and user experience for the management of consent.</p> <p>Consumer protection – Ensure data is handled safely and securely, with robust privacy safeguards and redress mechanisms in place.</p> <p>Regulatory oversight – Maintain robust regulation to ensure the objectives of the CDR are met and that consumers are protected.</p>
Issues	<i>Consumer uptake for CDR solutions remains low</i>	<i>Industry has not had the ability to rise to the competition and innovation challenge</i>	<i>The CDR's focus on data fidelity and depth has tradeoffs against implementation speed</i>
	<ul style="list-style-type: none"> The uptake in CDR banking solutions has not been as high as initially expected with active CDR users making up less than 0.15% of total unique customers of the major banks.⁽¹⁾ This lack of awareness of CDR in banking (also known as open banking) is highlighted in Frolo's 2023 survey into open banking penetration which found that 55% of consumers have never heard of open banking before and only 6% claimed to have a good understanding of the concept.⁽²⁾ 	<ul style="list-style-type: none"> Fintechs (as CDR data recipients) have not driven significant change in switching behaviour, despite some evidence of increased willingness to switch mortgage providers as interest rates increased in 2023.⁽³⁾⁽⁴⁾ Australian business will also need to uplift innovation activity. Australian business investment in innovation still lags that of other developed countries – 1.9% of GDP compared with 2.9% in Europe.⁽⁵⁾ Organisations that are sharing their data have been overwhelmed with ongoing rule/standard changes, in- part reducing innovation. 	<ul style="list-style-type: none"> CDR data set enablement has been gradual with 70% of data holders failing to comply with implementation timelines and 92% suffering data reliability issues and implementation gaps.⁽⁶⁾ Organisations sharing data have noted frustrations with continuous standard and rule changes, preventing innovation. Planned expansions of the CDR into finance and telecommunications sectors have been pushed back.



Key takeaways	<ul style="list-style-type: none"> The CDR's current implementation approach has had limited success in delivering on its consumer empowerment, competition and innovation imperatives 	<ul style="list-style-type: none"> Without change, low CDR uptake, lack of industry innovation and slow implementation speeds will persist
	<ul style="list-style-type: none"> The CDR's data set designation and regulation has been robust, but this has come at a cost of agility, with the CDR's expansion plans to other sectors being delayed in addition to COVID-related delays 	<ul style="list-style-type: none"> The Australian Federal Government has recognised the need to address the CDR's issues, having funded a statutory review into the CDR and announcing a pause to the CDR's expansion into other sectors to reevaluate the path forward which maximises value from the CDR.

The current 'paused' focus for CDR looks to improve data quality and improve awareness but will struggle to gain traction without further sectoral expansion.

In the FY23-24 Budget, the Federal Government allocated \$88.8 million of funding for the CDR while announcing a pause to expansion shortly thereafter.⁽⁷⁾

In his address to the committee for Economic Development of Australia, Assistant Treasurer Steven Jones MP noted the three immediate focus areas of the CDR which continue a focus in banking and energy sectors, effectively pausing the CDR's expansion into other sectors:

- **Data quality** – Improve data quality and deepening participation in the existing sectors
- **Cyber security** – Improve cyber security across all CDR agencies to reflect the evolving data landscape
- **Awareness** – Expand awareness of CDR as a data-sharing model that allows consumers to easily identify CDR-enabled providers, products and services.

This focus has also included a pause on the expansion of the CDR into superannuation, insurance and telecommunications, shifting out economy-wide CDR delivery.

With a strategic review into the implementation of the CDR due in late 2024, and the mixed success to date, it is a timely opportunity to step back and review the CDR's broader approach to see how to maximise more value from the CDR for Australians.



Impacts of the CDR's current plan forward on its objectives

Impact on putting the consumer in control of their data	Impact on fuelling competition and productivity in the economy	Impact on setting the standards for consent and privacy management
<ul style="list-style-type: none"> • While consumer awareness of the CDR is limited, informational efforts, such as marketing campaigns are, in their own right, unlikely to resolve low CDR consumer adoption • Developing new use cases exclusively enabled by the CDR creates a unique value proposition for consumers to get on board with • Currently, progress on this condition has been slow as CDR-enabled products have largely replicated existing data sharing solutions albeit with higher security (e.g., screen scraping of banking transaction details replaced with CDR data sharing) • Focusing solely on awareness campaigns will continue to have minimal impact on adoption. 	<ul style="list-style-type: none"> • Improving data quality and cyber security is important in building CDR consumer confidence but current regulation-led focus comes with prohibitive compliance burdens for businesses • The statutory review into the CDR evidences this with small/large participants and consumer groups highlighting the resource burden of engaging with multiple regulators for the CDR⁽⁸⁾ • Large corporates have been particularly constrained with compliance burdens limiting their ability to innovate • This is problematic as the innovation burden then falls to fintech or startups who lack the customer base and scale to drive economy-wide awareness and uptake. 	<ul style="list-style-type: none"> • The CDR's next steps set an intent towards higher fidelity consent frameworks with action initiation (also known as write access) • This reflects a tradeoff decision between 'getting things right' in banking vs expanding the CDR into other sectors • Delaying expansion into other sectors means that consumer / business value is developed less iteratively relying on a major transformation of connected data sets across sectors at some point in the future • This is problematic as cross-sectoral data sets would be uniquely enabled by the CDR, without which CDR consumer adoption will remain low.

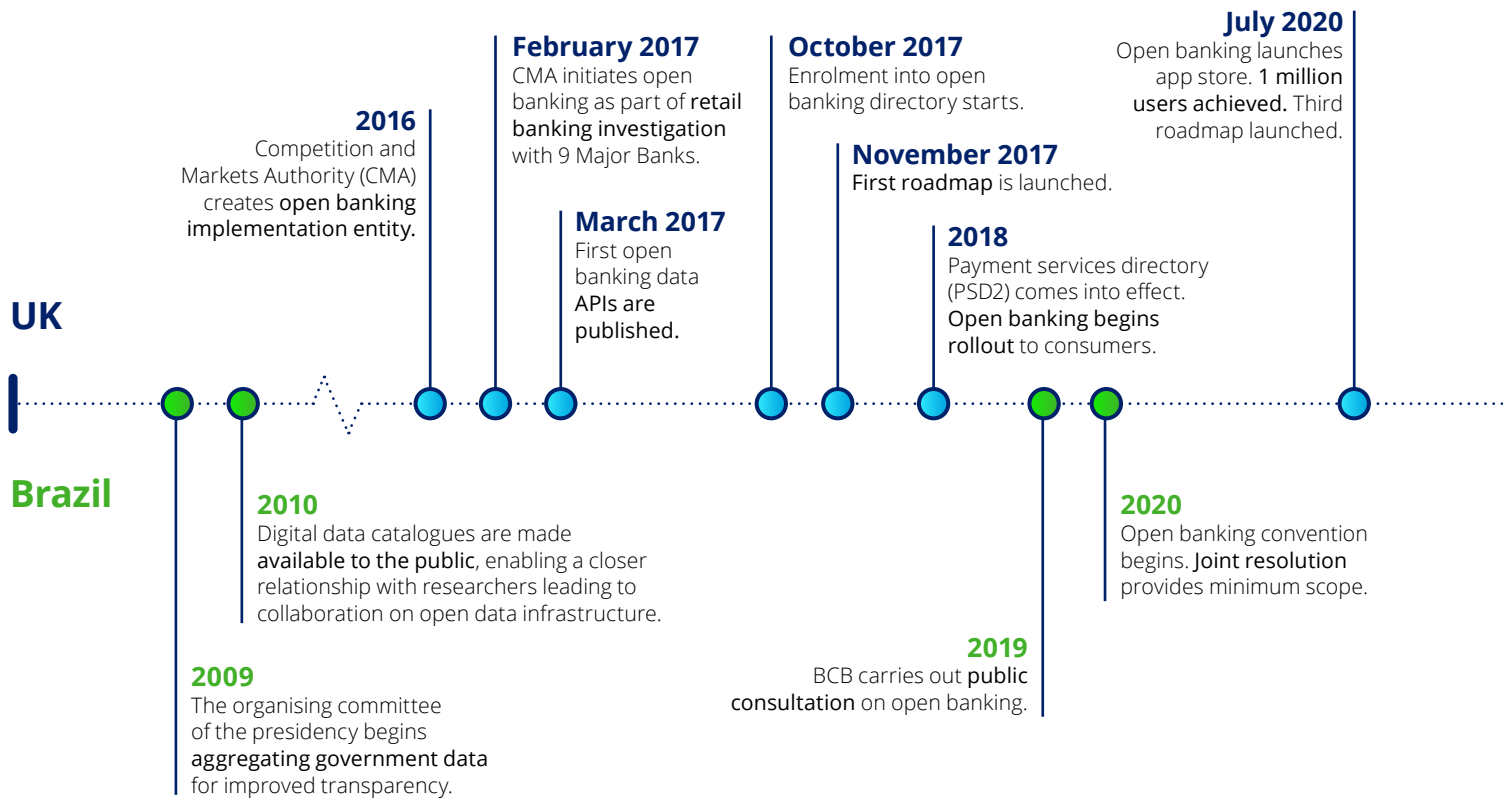


Key takeaways

- The current 'paused' path for the CDR is unlikely to solve the awareness challenge or drive increased competition and innovation alone. Rather, it is timely to consider the underlying consumer value proposition and the role of use cases and data sets in driving business action and consumer uptake.
- While the CDR does have data consistency issues that need to be addressed (e.g., 92% of data holders have implementation gaps or data reliability issues), a more balanced tradeoff of increased fidelity vs sector expansion may be required.⁽⁹⁾
- Continuing the current implementation plan for the CDR creates significant short and long-term costs (real and opportunity) for consumers and businesses.
- The current path also shifts out value from an economy-wide CDR to an undetermined point into the future.

Looking abroad

There are lessons to be learned from other jurisdictions including driving consumer adoption through functionality (UK) and creating value by including government data sets (Brazil).



UK | A first-mover

Description

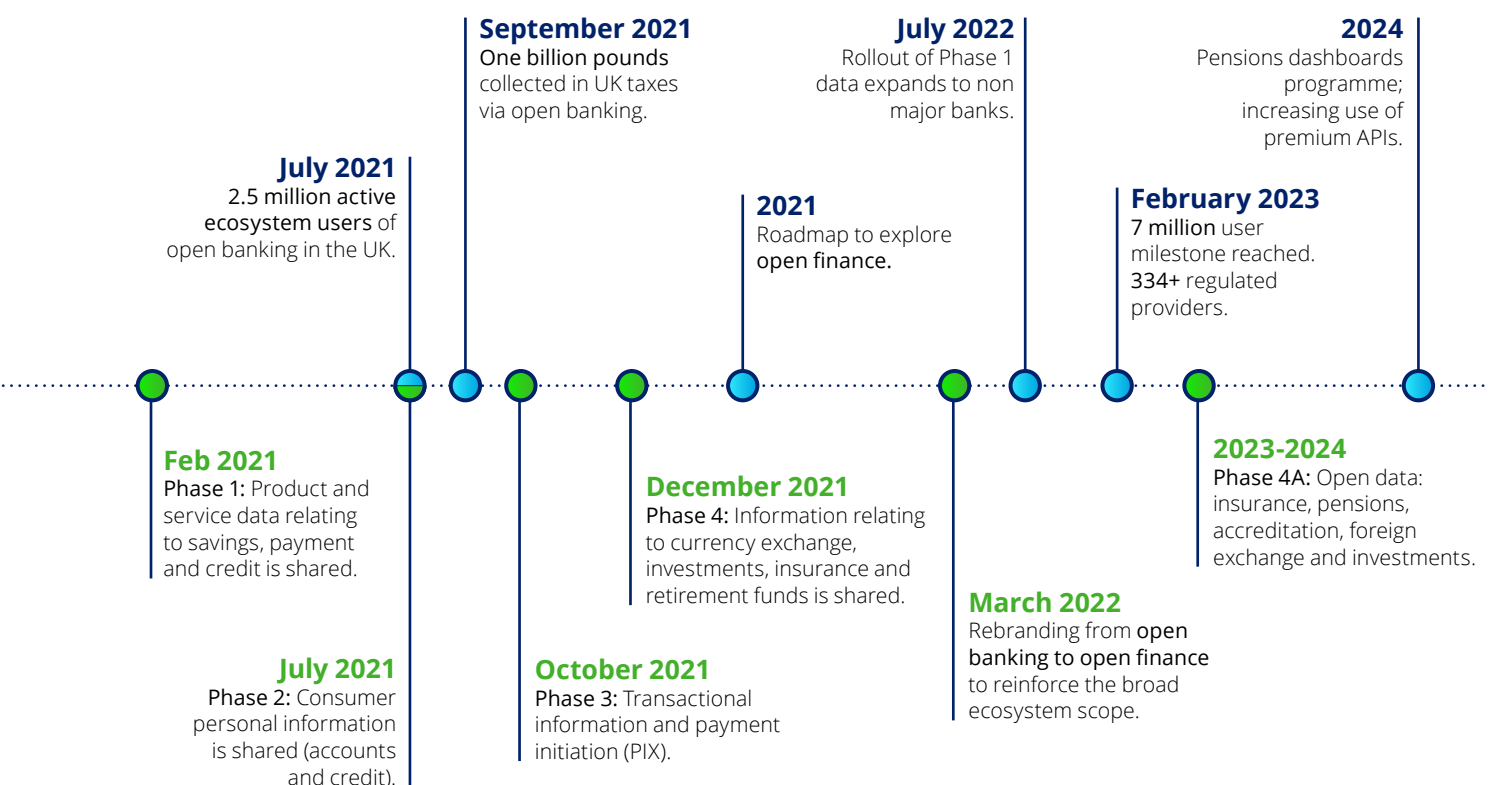
- The UK Launched open banking in 2018 by initially mandating the largest nine banks to share consumer data⁽¹⁰⁾
- The UK launched with a **principles-based regulation rather than prescriptive rules**, providing industry with flexibility in establishing data standards
- Unlike other jurisdictions, the UK has prioritised **write access** (also known as action initiation) to drive more innovative products for consumers⁽¹¹⁾, which has driven more robust cyber security and consent complexity in its rollout⁽¹²⁾
- Although initially targeted solely at open banking, the UK has begun initiating a multi-sector approach through the Smart Data initiative⁽¹³⁾

- In October 2023, the Smart Data Discovery Challenge was announced, seeking innovators to submit cross-sector ideas (covering financial services, energy, retail, transport and home buying) to address challenges like the cost of living, the transition to net zero and supporting vulnerable individuals.

Lessons Learnt

Functionality has driven adoption – With approximately seven million active users of open banking, the UK uptake has been impressive.⁽¹⁴⁾ Attention should be paid to the functionality that has resonated with consumers and driven adoption (i.e., the consumer value proposition.)

Multi-party technology project – strong collaboration amongst stakeholders and an effective governance mechanism are necessary to deliver and evolve technical standards.



Brazil | A precision approach

Description

- Open banking in Brazil was rolled out phase by phase with implementation initially only focused on Brazil's largest banking conglomerates⁽¹⁰⁾
- Brazil's open banking **regulatory approach is centralised** and overseen by the Central Bank of a Brazil (BCB)⁽¹⁵⁾
- Over the phased rollout, the scope of open banking broadened to include other institutions and data types⁽¹⁶⁾⁽¹⁷⁾
- At launch, Brazil limited its data sharing to third parties as **read-only**, simplifying consent requirements and increasing Brazil's implementation speed⁽¹¹⁾⁽¹⁵⁾
- Brazil has continued to expand the scope of open banking with a **shift to open finance in 2022** and the addition of write access in future phases⁽¹⁸⁾

- It is notable that in the late 2000s, Brazil started gathering data from various public agencies. This data formed the basis for a foundational cross-sector dataset.⁽¹⁹⁾

Lessons Learnt

Government data benefits – The potential for innovation and customer value is significant when these datasets are merged, as has been shown in Brazil.⁽¹⁹⁾

Fast follower advantage – Following or collaborating with other jurisdictions on selective aspects of data portability helps reduce cost and increase speed. Brazil's speed has been in part driven by being a fast follower of the UK.

Chapter 2

Where is my data?

- Leveraging the OECD's *consumer data typologies* and the International Data Corporation's (IDC) statistics on consumer data storage across Australian businesses, this report analyses where the highest volume and different types of data originate from in the economy.
- Software and information services businesses in the technology sector (i.e., technology providers and social networking sites) capture the highest volume of Australian consumer data – around 59%.
- However, public administration (i.e., federal, state and local government and agencies) collects the widest variety of consumer data types, and is the primary source for the majority of consumer data types.
- The CDR can realise more value by prioritising data sets from these sectors which, when combined, can provide a more comprehensive view of the consumer. In this way, the CDR can become a policy instrument that enables more personalised consumer experiences and innovative use cases.

Banking and energy as the current sectors designated for the CDR only account for...

4% of total consumer data holdings in the Australian economy.



CDR needs to extend beyond the current sectors for Australia to capitalise on the opportunity which currently only extracts value from a small section of the consumer data pool.

Consumer data is collected everywhere, leveraged by organisations to produce value.

Organisations use consumer data for a variety of purposes. For government, insights from consumer data are used to inform public policies. For businesses, consumer insights are regularly used to inform decisions such as new product development, and customer personalisation.

However, the always-on nature of modern data capture can disenfranchise consumers. In turn consumers may no longer extract value from business and government use of their data.

Consumer benefits

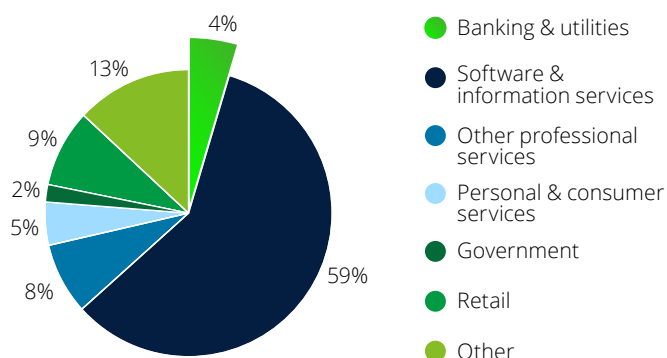
- Tailored customer service
- Product development informed by consumer insights.

Business benefits

- Product and service differentiation
- Personalisation
- Improved acquisition and retention
- Enhanced productivity
- Market share capture.

Understanding both where consumer data is captured and the unique consumer insights that data types provide can help guide future CDR rollout to more consciously increase consumer benefits.

Proportion of total consumer data in Australia stored by sectors (%) - 2023



Source: IDC's Worldwide Global DataSphere and Global StorageSphere by Vertical Industry Taxonomy, 2023, Doc # US51342123, Nov 2023

- Banking and energy, as the current sectors onboarded onto the CDR, represent only a small portion of the total amount of data (4%) captured by sectors across the Australian economy.
- The CDR's current implementation approach which has delayed expansion into other sectors, will continue the trend of only capturing a small portion of the total value of data for consumers in the Australian economy.
- A shift of the current approach to CDR expansion, to expand into broader data sets, should be considered for this value to be captured.
- Doing so in a scalable manner will require understanding of where high-value data sets (i.e., through scale of data unlocked or uniqueness of consumer information) reside.
- A limitation of measuring data by volume rather than by type is that quality of the data isn't represented. For example, government agencies may hold a lot of important static and authoritative data despite it not holding a large volume.

Value of data

Volume – Understanding data volume across sectors helps contextualise the impact of unlocking large data sets. Whether this is through more frequent capture of consumer data or a large consumer base for a data set, an analysis of data volume by sector provides a view on scale of impact for unlocking data sets.

Type – Data type analysis provides an understanding of where unique data sets reside, and the primary source of commonly used data. Prioritising inclusion of unique data sets held by primary sources enables greater consistency across the economy (i.e., a single source of truth) and differentiated perspectives of the consumer to be analysed across sectors. This analysis seeks to illustrate which sectors' data sets hold the most unique views of the consumer.

Considering both data volume and type provides a view on where future value could be unlocked to uncover the most obscured knowledge about the consumer in the CDR's expansion. This can be achieved by harnessing the consumer data sets available today.

Data: By volume

Based on volume of consumer data held, the analysis indicates introducing data held by software and information services businesses in the technology sector into the CDR could generate substantial economic and societal benefit.

The consumer data footprint left in the Australian economy is large, estimated at close to 48,000 petabytes in 2023.

Software and information services businesses in the technology sector dominate holdings of consumer data with close to 28,500 petabytes stored on an annual basis (around 59% of total consumer data stored in Australia). This follows with the 'always on' nature of data capture in the sector with a particular focus on consumer behavioural/usage data and user generated content.

Other than software and information services providers in the technology sector, a variety of consumer-facing sectors also collect significant amounts of data. This includes retail, other professional services, personal and consumer services and healthcare providers.

The analysis on data holdings reflects the typical nature of consumer interactions and the type of data captured by businesses in each sector. For example, construction businesses have less data available for capture than an online retailer, given the extensive consumer touchpoints in the online environment, where data is automatically captured. Further, video and photo files will take up significantly more storage than a document or consumer profile artefact.

Given around 98% of the consumer data collected by software and information services businesses in the technology sector and other professional services is social media content (including photos, videos and non-image content uploaded to social media platforms), this will affect the size of holdings compared to government where 72% of consumer data is productivity data (this refers to data created and replicated on phones, PCs, servers and various IoT devices such as emails, texts, software data, metadata etc).

Implications

Unlocking more value from consumer data is dependent on learning more about consumers and how they make daily decisions at key life moments.

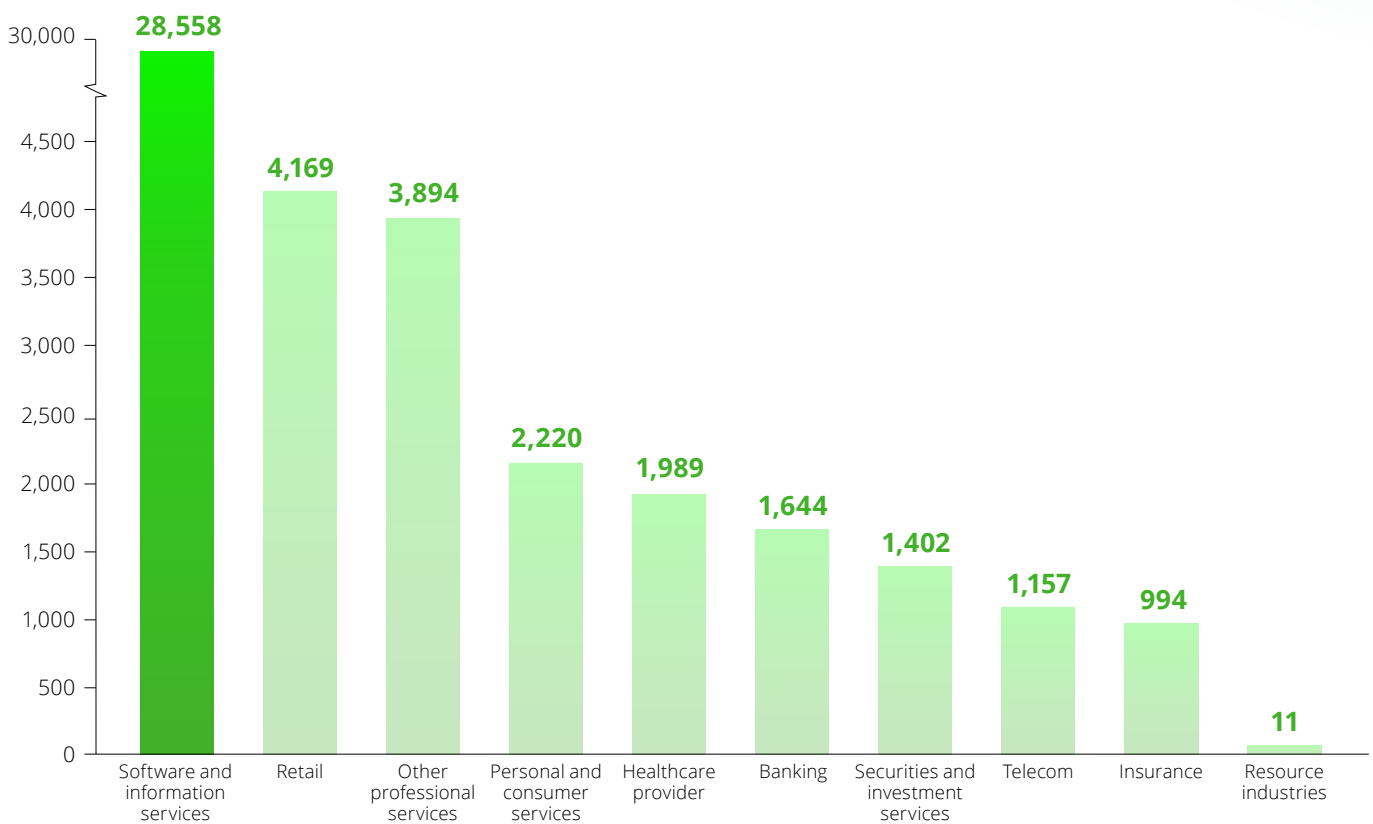
The value of unlocking large data sets maximises the potential application to a large proportion of customers and the potential for innovation. This is dependent on potential use cases being developed, posing two key questions:

1. How could these data sets be potentially used to drive consumer benefit?
2. What additional views about the customer are gained by unlocking these data sets to other businesses?

It should be noted that the value derived from data portability is not solely based on the size of the data being unlocked.



Volume of data stored (total petabytes), consumer data only, by sector – Australia (March, 2023)



Source: IDC's Worldwide Global DataSphere and Global StorageSphere by Vertical Industry Taxonomy, 2023, Doc # US51342123, Nov 2023

These are unique sector categories used by IDC which are different from other categorisations, such as Australia's ANZSIC codes.

Government includes federal/central and state/local government industries.

This analysis estimates the size of consumer data that is both generated and stored within a year, and that is not deleted or overwritten within a one-year time frame. It is measured in petabytes – a unit of data storage capacity. For comparison, a single petabyte of data is the equivalent of having roughly 61,000 16GB iPhones. ⁽²⁰⁾

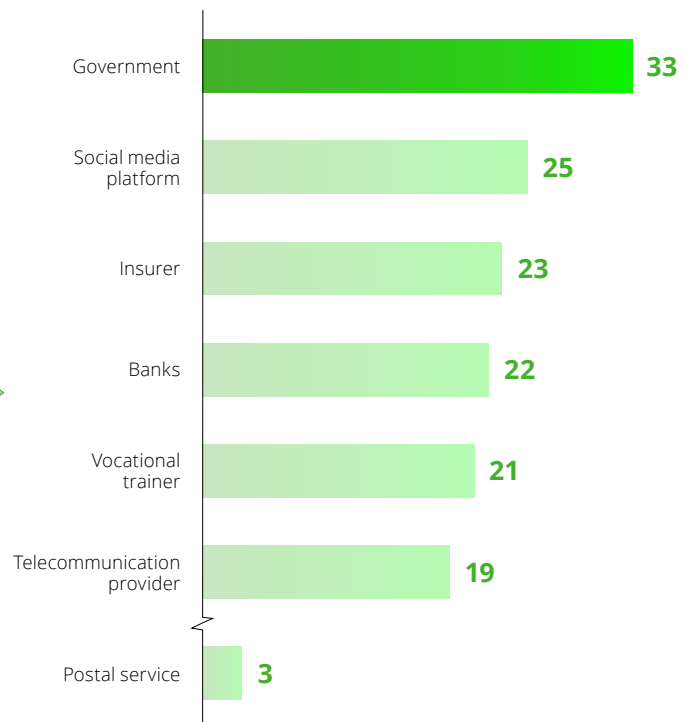
Data: Capture types

Mapping consumer data across sectors shows government, social media platforms and Insurers capture the most types of consumer data.

Consumer data taxonomy	
Demographic and identifying	1. Telephone/emails 2. Age/DOB/gender 3. Name...
Finance	20. Transactions 21. Taxation information 22. Assets/liabilities...
Health	27. Health conditions 28. Family details 29. Prescription...
Behavioural/ Usage	33. Product characteristics and preferences 34. Energy usage...
Online	37. Blogs 38. Photos 39. Online activity...
Education	44. Education transcripts 45. Education level 46. Extracurricular activities.

For the complete Consumer Data Taxonomy and Methodology see Appendix.

Number of data types collected by business type - top 6



Source: Deloitte Access Economics

Note: this graph analyses data collection by business type, where at least two example business types were used for each ANZSIC sector analysed (see Appendix).

- Leveraging the OECD's *consumer data typologies* as a base, Deloitte has created a consumer data taxonomy that groups together 46 distinct consumer data types across six categories.⁽²¹⁾
- A range of data types are being collected by businesses from various sectors to generate value for consumers and the business – and this is occurring in closed data ecosystems.
- Many sectors collect a vast range of data types, not just banking and energy. Public administration and safety collects the most diverse types of data.



New verticals allow platform providers to capture cross-sectoral data sets

Digital platform providers, such as social networking sites or large technology organisations facilitate the development of innovative products and services for customers in a closed data ecosystem. Increasingly, data platform providers are expanding into new product verticals and capturing different facets of consumer data.

In some cases, platform providers are the only option for consumers, particularly where network effects are in play, granting platform providers with exclusive access to aspects of consumer information.

Digital platform providers collect approximately 40% of data types in the consumer data typology framework, including device usage, user location, search history, the movies/music preferences, exercise and health activity.

Impact

Combined consumer data can be used to create an ecosystem of products that are:

- **Personalised** – recommend friends in games, songs preferences
- **Better** – retention and stickiness of gaming
- **Value amplifying** – energy usage insights and potential areas of savings for the consumers.

Other uses include selling personalised ads, to communicate with consumers, prevent fraud, and comply with law.

Lessons for the CDR

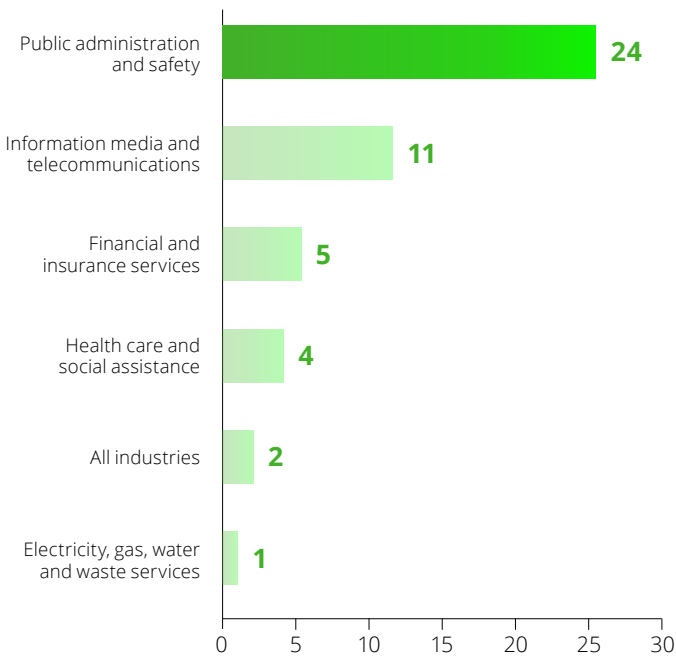
Combining data across sectors allows digital platform providers to generate significant value. Opening the data ecosystem would empower other sectors to expand value creation.

Governments, digital platforms and a range of other sectors hold consumer data. The CDR should broaden data sharing across sectors sooner rather than later, to drive competition and innovation for the benefit of the consumer.

Primary sources

Refocusing on primary sources of data could accelerate economy-wide benefits, including minimising data duplication and improving data quality.

Number of data types for which a sector is the primary source



Source: Deloitte Access Economics

'Primary source' refers to the sector that can be seen as an authoritative source behind a consumer data set (e.g., Public administration and safety would likely have the most credibility in validating a consumer's date of birth).

By adding the lens of primary source in addition to where data types are captured across the economy's sectors, the answer to where 'quality' data is captured can be determined.

With 24 consumer data types, public administration and safety is the most prolific sector as a primary source of consumer data. Prioritising unlocking these data sets for CDR roll out offers consistency benefits to address the static vs dynamic nature of consumer data sets (e.g., while Date of Birth (DOB) is unlikely to change, address information is likely to be dynamic creating inconsistent consumer identifiers across businesses over time).

Establishing primary sources of data as a single source of truth allows consumers to update data in a single interaction with primary generators, with this update then filtering through to all relevant businesses across sectors through the CDR.



Date of Birth is captured in most sectors, risking discrepancies with the single source of truth

DOB is a demographic and identifying consumer data point that is captured in 80% of the subsectors in the consumer data taxonomy.

DOB can be used for a variety of purposes (e.g., consumer identifier, personalised marketing etc.)

Multiple users and use cases for DOB data gives rise to data consistency issues across the economy.

Impact

Business – Conflicting and low-quality consumer data can reduce the effectiveness of acquisition and retention spend. Eighty-three percent of 11 to 15 year olds lie about their age when using social media.⁽²¹⁾

Consumer – Evidencing DOB repeatedly is inefficient, with consumers reluctant to provide this data where there is no clear use for it. Only 40% of consumers consider it fair and reasonable for social media platforms to collect DOB.⁽²²⁾ As it is a personally identifiable information, it can be misused if accessed by fraudsters in conjunction with other information) to conduct identity theft.

Lessons for the CDR

Unlocking consumer data sets such as common consumer identifiers offers widespread benefits.

DOB serves as only one example of how primary source data can be used to minimise data collection, improve data consistency and reduce the risk of fraud. Unlocking government data sets as the primary source of 24 data types will accelerate this benefit.

In addition to providing the highest volume of unique data types, public administration and safety, and information, media & telecommunications cover the widest variety of primary source data.

Sectors that collect data types within each category

Data categories	Behavioural/usage	Demographic and identifying	Online	Finance
Public administration and safety	●	●	●	●
Information, media and telecommunications	●	●	●	●
Education and training	●	●	●	●
Financial and insurance services	●	●	●	●
Health care and social assistance	●	●	●	●
Electricity, gas, water and waste services	●	●	●	●
Transport and post	●	●	●	●
Administrative and support services	●	●	●	
Rental, hiring and real estate services	●	●	●	●
Accommodation and food services	●	●	●	●
Professional, scientific and technical services	●	●		●
Retail trade	●	●	●	●
Arts and recreation services	●	●	●	●
Construction	●	●		

Source: Deloitte Access Economics

Chapter 3

Focusing on the consumer

-
- Products that solve for a consumer's needs will drive high perceived utility; this is so for both daily objectives (e.g., energy plans) and major life events (e.g., buying a home, managing health etc.)
 - Solving for consumer life objectives requires data sets across multiple sectors. This will create the platform for businesses to innovate previously unattainable products and services.
 - Shifting the CDR from compliance-focused implementation to designation based on consumer life objectives is likely to drive high adoption.
 - Examination of CDR through the lens of the Technology Acceptance Model (TAM) is instructive (the TAM is a framework for what drives consumers to adopt new platforms). Ensuring that all aspects of the TAM are addressed will solve for low consumer adoption.
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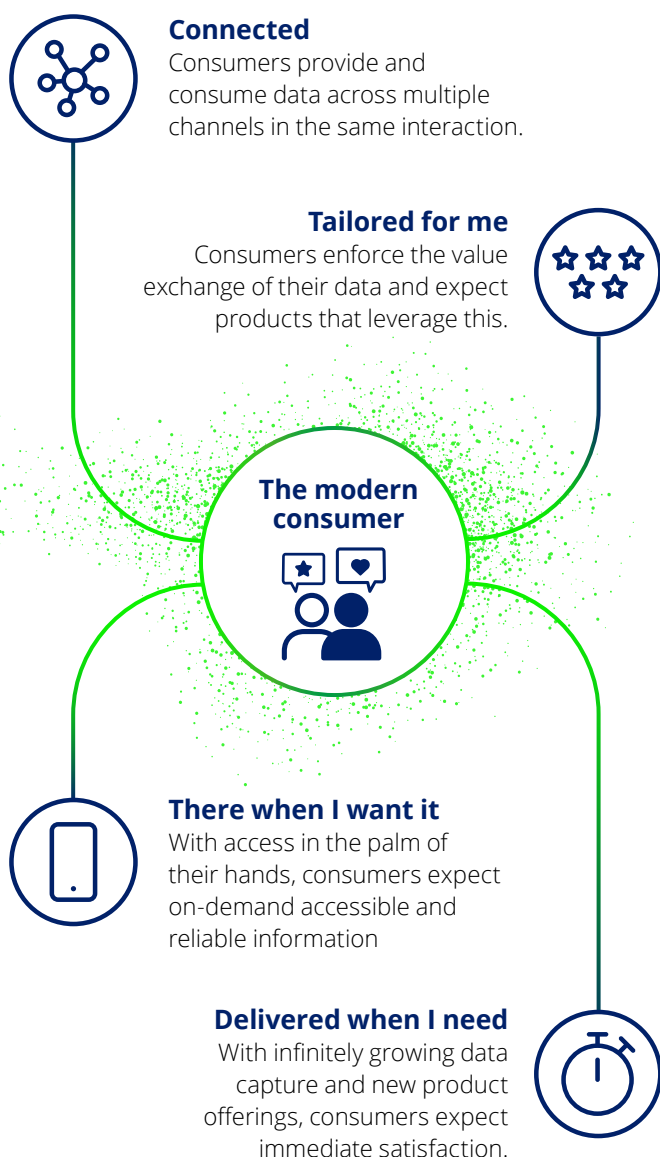




A deep understanding of modern consumer behaviour is required for the CDR to truly deliver value to consumers.

Today's consumers have high expectations for their digital interactions. These expectations do not sit neatly within product categories – they expect the frictionless digital shopping experience to extend to financial services, the personalisation of entertainment platforms to extend to shoe shopping and the immediacy of next-day delivery to apply across industries. Our experience shows that a modern consumer has four common expectations.

Four relevant behaviours of the modern consumer



Consumer data exchange for seamless and integrated app experience

The digital evolution created seismic change in consumer behaviour, changing the way that businesses serve consumers at a fundamental level. Traditional mass and product centric marketing strategies buckled under the shift towards personalisation and experience economy.

The rise of all-in-one platforms as well as the paradigm of data exchange between consumer and businesses continue to change consumer behaviour.

Consumers are more willing to trade their data in exchange for highly personalised services.

Case study: Grab

Starting as an Uber-like on-demand taxi service, Grab has now grown to an impressive breadth of offering, including GrabTransport, GrabFood, GrabMart, GrabPay, GrabInsure, GrabRewards and GrabGifts and much more.

Grab, by way of the 'super app', has become weaved into the very fabric of many consumer's everyday lives.

This model is aligned with the expectations of modern consumers outlined here, with connected channels between services enabling data sharing to inform personalised recommendations (i.e., best ride options available) and truly on-demand service with speedy delivery.

Opportunities for the CDR

Building a super app and moving towards a platform model is a common aspiration for Australian businesses – both large and nascent.

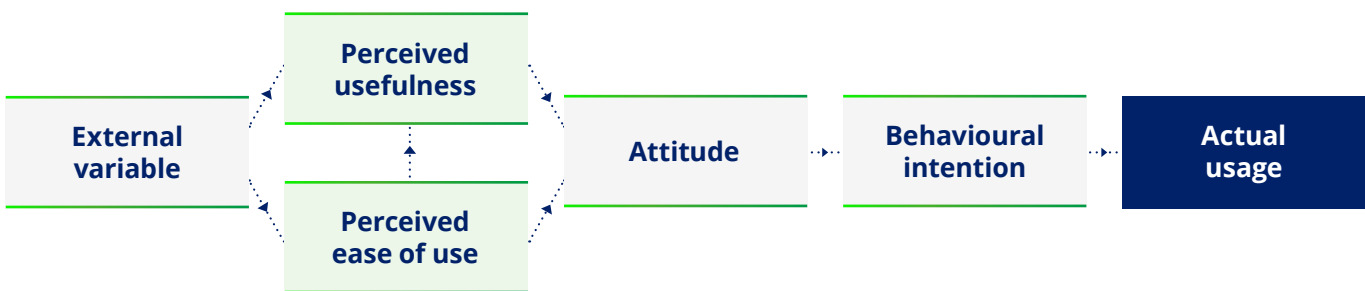
High cross-sector adoption of the CDR would enable businesses to better meet consumer expectations as well as turbocharge the push towards super apps and platform models.

Driving adoption

Creating a clear value proposition for CDR around value drivers will drive increased adoption and ultimately higher realised value for Australians.

Technology Acceptance Model

The Technology Acceptance Model is a well-established model that is widely used within information systems and platform design theory to model the main drivers behind consumers' decisions to adopt platforms.



Driver	Definition
<p>External variables</p>	<p>External variables – aspects of a user’s interaction with a platform that are unrelated to specific functionality but influence their perceptions of usefulness and ease of use.</p> <p>For the CDR, external variables could include existing prevalence of data sharing in the economy (e.g., MyGov or screen scraping enabled account aggregation).</p>
<p>Perceived usefulness and perceived ease of use</p>	<p>Perceived usefulness and perceived ease of use are driving forces behind a consumer’s choice to adopt a platform, with perceived usefulness being the belief about utility and ease of use being self-explanatory.</p> <p>For the CDR, consider a consumer that needs to apply for a home loan and is faced with the choice of gathering payslips and other statements or ingesting data through CDR – i.e., high perceived usefulness and remarkably easy to use compared with the alternative.</p>
<p>Attitude and behavioural intention</p>	<p>Like external variables, attitude and behavioural intention provide enabling aspects of a platform’s consumer value proposition.</p> <p>Attitude – emotions which if positive (e.g., comfort, excitement) then lead to a strong desire to use the platform.</p> <p>Behavioural intention – a clear desire to use a platform which if followed through leads to successful adoption of the platform.</p>



Generative AI shows drivers of platform adoption in practice

The meteoric adoption of Generative AI evidences how fulfilling aspects of the TAM can drive consumer adoption.

Although AI technology has existed for a number of years, the democratisation and accessibility driven by the open- source community has rapidly progressed the accuracy and application of the technology.

User friendly tools (such as the familiar instant messaging/chat interface) address users' perceived ease of use and usefulness, requiring little effort to generate content beyond writing an initial prompt.

Rapid consumer uptake of Generative AI tools also provide strong network effects contributing to strong positive attitudes and behavioural intent for users who join at critical mass.

Impact

- Chat GPT saw 1 million users in five days from launch and as of Oct 2023 sees over 1.5 billion users per month⁽²⁸⁾
- 32% of employees use some form of Gen AI⁽²⁹⁾
- ChatGPT can increase workers efficiency by 40% while increasing output by 18%.⁽³⁰⁾

Opportunities for the CDR


The growth story behind Generative AI tools paints a picture of what CDR uptake could be like provided the adoption drivers under the TAM model are met.

Fueled by data, with better access to their personal data, consumers can obtain even greater benefit from Generative AI. Australia stands in front of a key opportunity to expand the CDR to safely share consumer data.

Perceived usefulness & ease of use

Perceived usefulness and ease of use should be seen through the lens of a consumer's needs across their life – this will drive higher CDR adoption.

Key

 Sectors where CDR data sharing has already been enabled

Research shows consumer life objectives (and life events) are not sector specific



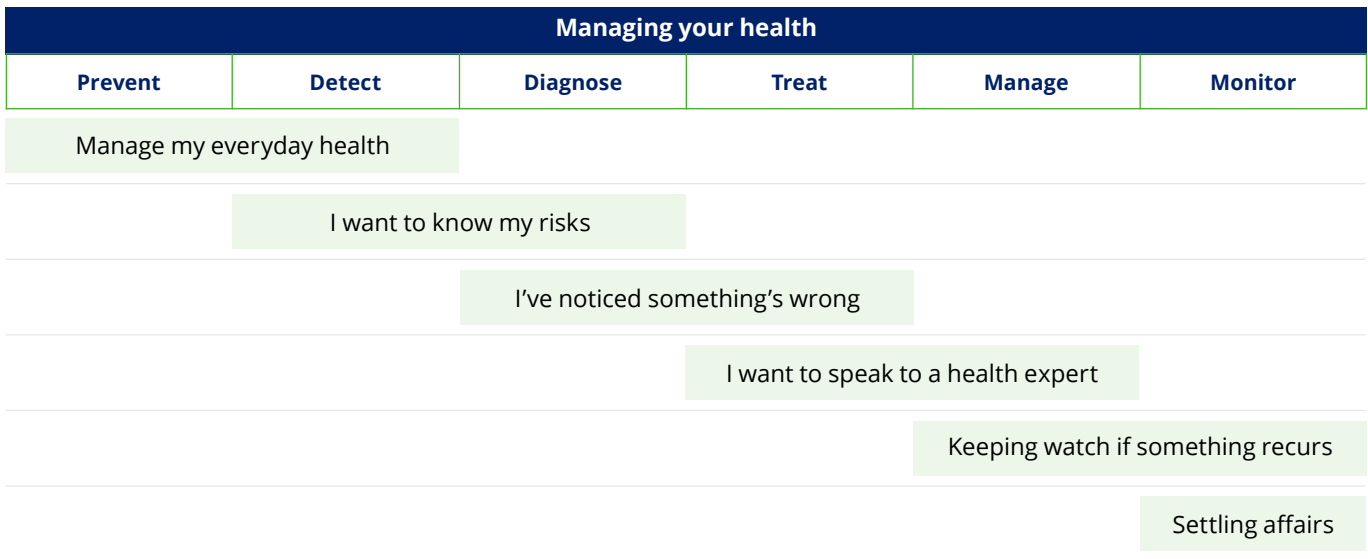


Key takeaways

Currently the CDR has a limited consumer value proposition as it focuses on only two industries rather than creating space for innovation that solves for specific life objectives across sectors.

- Data recipients design consumer products with limited visibility of consumer data captured by other sectors. This limits their scope to sector-specific activities within a life journey rather than on more intuitive activity grouping for the consumer (e.g., writing a will vs settling your affairs; managing your health).
- The CDR's sector based approach will continue this as data fields earmarked for sharing are chosen based on usefulness to designated sectors rather than on the ecosystem of sectors supporting a life event.
- Additionally, products seeking to leverage consumer data sets across sectors are dependent on a speedy rollout to new sectors.
- Refocusing rollout efforts to enable better consumer products for life objectives will create a compelling consumer value proposition for the CDR as consumer value is delivered iteratively rather than waiting for a large volume of data sets across sectors to be brought onboard.

Designing the CDR around life objectives to maximise consumer value will require cross-sector data sets; life objectives (and acute events) don't exist within neat sector boundaries.



Key

- WF** = Wellness & fitness **RT** = Retail **HE** = Health **LG** = Legal
- IN** = Insurance **TC** = Technology **GM** = Government **BN** = Banking

Manage my everyday health	I want to know my risks	Manage my everyday health
WF Compare gyms, fitness and wellbeing services I use.	TC Take gene tests to test for health condition risks.	TC Receive insights from activity trackers and health monitors(e.g., sleep patterns, heart rate).
IN Compare my insurance policies and benefits.	HE Receive notifications for increased health risks (e.g., insulin levels for diabetes, sedentary lifestyle changes).	
RT Compare and health/wellbeing accessories (e.g., workout apparel).	HE Access personal and family health history (e.g., vaccinations and immunisation history).	TC Record and analyse exercise activity.
TC Manage and measure my daily routines (e.g., medication/supplements intake, exercise, sleep patterns).		TC Record and analyse diet/nutrition information.
TC Set and record progress against goals.		



I want to speak to a health expert	Keeping watch if something recurs	Settling affairs
HE Book an appointment with a specialist or organise a referral.	HE Receive notifications for increased health risks (e.g., insulin levels for diabetes, weight increases/ sedentary lifestyle).	LG Write a will and planning for transfer of your assets.
IN Review updates to insurance benefits eligibility in real time.		BN Close a loved one's accounts and their bills.
GM Review if I can bulkbill or what I can claim back from Medicare.	TC Monitor symptoms by capturing biometric data (e.g., sleep, heartrate, insulin etc).	GM Obtain a death certificate.
HE Keep all my health records and artefacts in one place (e.g., X-rays).	TC Record and analyse exercise activity.	RT Plan for funeral/ memorial service.
HE Manage and share my prescription records.	TC Record and analyse diet/ nutrition information.	GM Cancel social service benefits.
HE Book and manage appointments with allied health/medical specialists.	HE Access details on diagnosis and symptoms to be aware of.	



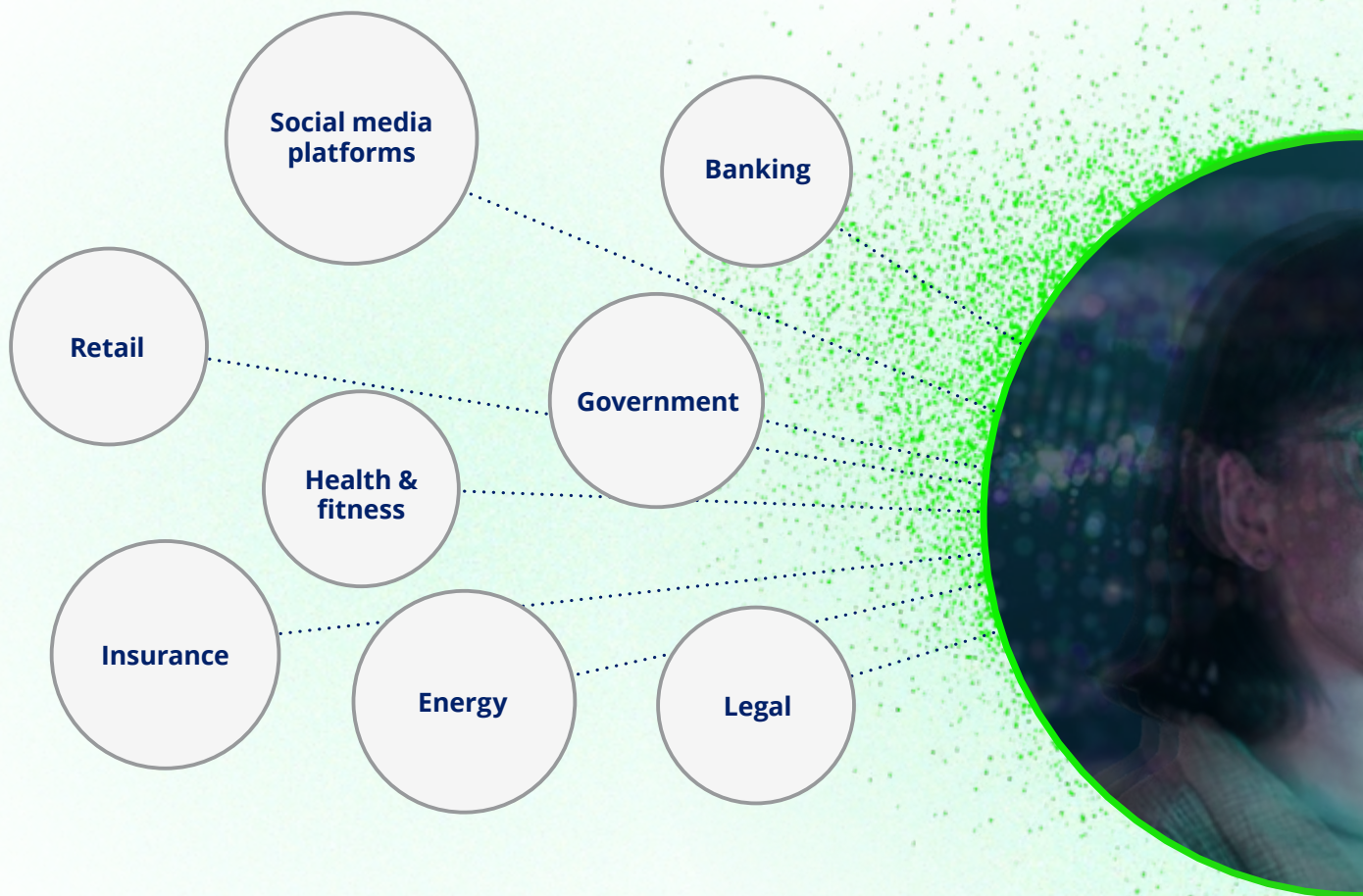
Key takeaways

Prioritising the introduction of cross- sectoral data sets into the CDR will ensure that consumers can be supported through life objectives and thereby achieve the initial government aims.

- Enabling shared data sets relevant to a consumer's life objectives allows businesses to deliver products that provide higher value for consumers
- For example, an intelligent assistant could analyse health and lifestyle patterns captured via a smart watch to identify risk factors, diagnose potential health conditions, recommend and book health services based on insurance eligibility and store information about the user's personal health records
- This has high perceived usefulness for the consumer as new product insights may be possible through combination of consumer data e.g., duplicative service coverage or unseen spending habits
- The ease of use with economy-wide data sharing infrastructure would be notable for consumers, eliminating the need for any manual porting of data or manipulating data to fit product input requirements.

Enabling a CDR designed around consumer life objectives will transform how consumers navigate their interactions with businesses, reducing effort and returning time for them to live their lives.

The CDR Today | Siloed and scattered



With the CDR's current scope, Samantha must interact with multiple businesses across multiple sectors to get a picture of how her health is looking and what she needs to do to manage it. Think tracking her personal fitness, making healthy diet choices, doctor's certificates, and more.

She's frustrated by having to log on, call or visit these companies and provide the same information multiple times.

Outcome

Samantha often gives up, meaning that she doesn't get a full view of her health. Ultimately, she's limited in making the best decisions.



The CDR Tomorrow | Integrated and low effort



With CDR data sets that span more sectors in the economy, it's much simpler for Samantha to manage her everyday health. She takes advantage of an app that pulls together everything she needs (i.e., a health score based on her daily steps/workouts, blood glucose level from a continuous glucose monitor, nutrition information linked to transaction history, mood journaling scores, view of health insurance benefits utilised and much more).

This automation extends to all aspects of managing her health including understanding her risk factors, when she's noticed something might be wrong and needing to speak with a professional.

Outcome

Samantha only has to look in one place to understand her health. Through automation, she has a view of her past, present and predicted health. Samantha feels more confident and knowledgeable.

External variables

Factors such as security, privacy and control influence consumer adoption by driving both perceived usefulness and ease of use.

Data security

With more frequent data breaches and fraud incidents, consumers are more cautious about how their data is handled and protected once provided. If consumers lack confidence in how secure their data is they will perceive less value from the CDR.

By design, the CDR has sought to relieve these concerns in its data sharing policy. The CDR has enabled this through the CDR privacy safeguards, in particular *Chapter 12: Security of data and the handling of redundant data*, and through the accreditation process of data holders/recipients to ensure compliance at the outset.⁽³¹⁾



9 in 10

Australians have a clear understanding of why they should protect their personal information.⁽³²⁾

Privacy

Consumers' views on their right to private use of their data influences their perceived value of platforms. More specifically, transparency on the purpose, use and intended sharing with other parties is a comfort to consumers.

Solving for this will require transparent information to be made available in the background due to the privacy paradox. The privacy paradox suggests a disconnect between consumers' concerns about privacy and the limited effort consumers put in to protecting their data.⁽³³⁾ Designing for increased security while not relying on consumers to be knowledgeable on data privacy practices is a key design challenge for the CDR.



4 in 5

Australians place high importance on how their data is collected, used and protected when choosing a product or service.

Control

Being able to actively retract or manage consent for data sharing once data has been shared provides flexibility for the consumer, shaping how they perceive product value as being defined on a consumer's terms.

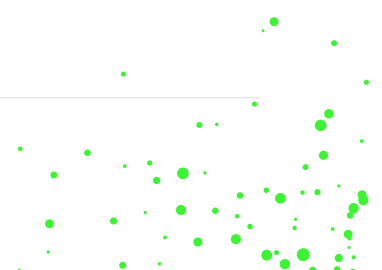
The CDR sets provisions for easy consent management for consumers. Accredited data recipients must provide a consumer dashboard that allows consumers to view and edit their CDR data sharing consent. These dashboards must be accessible online or through a mobile app, prominently displayed and accessible at any time.⁽³⁴⁾



84%

of Australians want more control and choice over the collection and use of their information.

The CDR should stand ready to ensure the secure and responsible sharing of data across the Australian economy.





Designing for these external influences will enforce more positive CDR perceptions

Awareness

From cautious non-believers to informed and empowered users of the CDR.

- The scope of today's CDR, and the limited ability of data recipients to innovate and differentiate has contributed to limited consumer awareness.
- Building awareness for consumer protections present in the CDR and potential consumer value will assist in empowering users and resolving any lingering data security, privacy and consent concerns.

Familiarity

From infrequent data sharing to CDR products ingrained into consumers' lives.

- Developing a stronger value proposition for CDR by continuing to broaden across sectors will also resolve consumer security, privacy and control concerns. A more compelling proposition will also likely mean that potential value outweighs any data sharing related hesitation consumers have.
- As consumers more readily adopt products using the CDR they build familiarity with data sharing. As the CDR becomes more ingrained in their lives, consumers hold less data security, privacy and control concerns, realising a higher reward to risk ratio from CDR products.

Attitude & behavioural intention

The focus should be on both 'push' and 'pull' tactics to deliver value to consumers in the medium term.

Like other regulation, rollout for the CDR has had the option to use 'push' or 'pull' style policy to influence industry action promptly.

Push influences – 'Push' style policy dictates policy outcomes through mandates or standards. Non-compliance is punished through fines, litigation, public disclosure of adverse findings or revocation of benefits.

Theoretical examples of push influences for the CDR could include operational efficiencies realised by being a first adopter of the CDR or grant programs for first movers to offset implementation costs.

Pull influences – 'Pull' style policy incentivises compliance with government regulation by offering rewards or benefits to complying businesses.

Theoretical examples of pull influences for the CDR could include adverse legal outcomes, such as fines for missed data set implementation deadlines and fines for poor data set reliability or quality.

CDR regulation in practice

OAIC and the ACCC 'as the CDR's regulatory bodies' have primarily relied on 'push' style regulation to drive compliance.

Bank of Queensland and ING Bank have been fined \$133,200 and \$53,280 respectively for missed deadlines or false/misleading representations on the service reliability relevant to the CDR.⁽³⁵⁾⁽³⁶⁾

The ACCC Chairwoman, Gina Cass-Gottlieb, has flagged tougher enforcement of the CDR to address implementation timeliness and data quality.⁽³⁷⁾

Additionally, fines solely based on adverse outcomes may fail to differentiate low intent to deliver CDR functionality vs issues brought about by a frequently evolving data set roadmap with highly prescriptive technical standards.

Government should explore policy options to more effectively incentivise businesses to integrate their data sets with the CDR quickly and simultaneously develop new product use cases from CDR data. Example items to explore include:

Super sandboxes

- In addition to the current regulatory sandboxes, businesses may accelerate with a 'super sandbox', being a sandbox that gives access to both de-identified private and public data sets (along with synthetic data) for testing purposes which sits (partially or fully) the full regulatory burden (see for example UK's Digital Sandbox).

Data exchange incentives

- Providing access to government consumer data sets on the condition that businesses also share their data can grow industry data sets on the CDR
- CDR API Monetisation policy should also be clarified to provide a clear business case for sharing additional data beyond specified data sets to enrich the CDR.

Incubators

- Incubator grant funding for CDR products could stimulate innovation by reducing the relative cost to set up and run a CDR focused startup
- Shared physical resources (e.g., office space and infrastructure), incubator mentorship and networking opportunities reduce financial barriers to entry and growth for CDR related startups.

Challenges

- CDR hackathons or challenges could reward established startups with additional funding or exposure to scale their businesses
- The UK's Open Up 2020 Banking Challenge awarded 15 fintechs a total of £1.5 million for product expansion and launched brand campaigns which reached 7.7 million people, highlighting the potential impact of challenge incentives.⁽³⁸⁾

Experiment and learn culture

- Shifting from the CDR's current designation based on regulator's views of desirability and viability to data holders/recipients requesting data for innovative use cases provides the basis for an experimentation culture
- Regulators should consult other data recipients on data set requests to evaluate total demand even before a working prototype has been developed.



Policymakers will also need to consider the emergence of personal data stores as consumers are increasingly faced with choices about where and how to consolidate their data.

What is a personal data store?

Personal data stores (PDS) are services that let an individual store, manage and deploy their personal data in a single secure location.

This gives consumers control over how they access, add, and curate their data, as well as how they share it with organisations.

This is in contrast with the prevalent model of data storage today in which consumer data is collected and kept in private stores, without the ability to share, store, and analyse in a standardised way.

Considerations for the CDR

As the popularity of PDS increase, policymakers may need to consider their role and the way in which consumers are empowered to bring data into their PDS.

Chapter 4

The economic potential of the Consumer Data Right

- The CDR has the potential to drive Australia's economic growth in the coming decades by accelerating further competition and innovation, which will ultimately benefit the consumer.
- Deloitte Access Economics has modelled Australia's growth potential under two scenarios:
 1. Baseline (continued focus in banking and energy)
 2. CDR expansion (across all sectors in the economy).
- Economic modelling estimates \$16.7 billion in forgone innovation and competition benefits and around 46,800 additional jobs in 2043 if the CDR fails to expand across the entire economy.
- Innovation accounts for most of these expected benefits. CDR expansion and access to cross-sectoral data sets is estimated to facilitate \$13 billion in innovation benefits alone by 2043. Meanwhile, improving competition in sectors other than banking and energy is estimated to enable an additional \$3.7 billion to the economy by 2043.
- Expanding the CDR will also deliver qualitative benefits in improved social welfare, health outcomes and consumer convenience.

An additional annual...

\$16.7 billion

of economic growth by 2043 is expected if the CDR expands beyond banking and energy sectors.





Enabling cross-sectoral data sharing will lead to greater competition and innovation, which will deliver market and broader societal benefits.

Macroeconomic benefits

The CDR will stimulate large-scale change to the economy, primarily through increasing innovation and competition.

Deloitte Access Economics' Regional General Equilibrium Model (DAE-RGEM) is used to estimate the potential economic benefit of the CDR by assessing the macroeconomic impacts of proposed CDR change over a 20-year period.

CGE modelling is used to demonstrate how a change in one part of the economy has impacts on other parts of the economy, measuring the change in size and composition of output and employment.

Competition and innovation levers are used to define two modelled scenarios.

CGE modelling cases

Baseline

- The CDR only focuses on going deeper in banking and energy
- Competition effects are exclusively considered and only applied to banking and energy.

CDR expansion

- The CDR expands to all sectors
- Competition effects are applied to sectors where the CDR would have highest competition impact
- Innovation effects are applied to consumer facing sectors (e.g., excluding mining).

Consumer/community benefits

The CDR will also enable societal benefits outside of macroeconomic impacts, overall improving consumers' quality of life.

Benefits enabled by the CDR include:

- **Improved societal outcomes** – Sharing government data has the potential to improve social programs outside of the public sector
- **Improved health outcomes** – Porting personal health data from personal technology devices to providers can help promote better treatments and monitoring
- **Improved security and convenience** – Data sharing between sectors can reduce unnecessary replication of data
- **Improved decision-making for complex problems** – Cross-sectoral data sharing can be leveraged through AI to help consumers with performing complex tasks (e.g., filling out expenses for tax claims) that require multiple datasets.

Exploring the macroeconomic benefits of the CDR can be done through two lenses: Competition and innovation.

Competition impact

An economy-wide CDR will improve competition across the economy. Namely the CDR could:

- **Reduce switching costs forcing stronger price and service competition** – CDR will improve comparison of products, for example through comparison tools by third-party providers, so that consumers 'get the best deal.'
- **Stimulate labour productivity in the face of price competition** – Lower competition has been shown to stimulate labour productivity by exposing businesses to greater pressures to shrink or exit, leading to a greater dynamic reallocation of resources.⁽³⁹⁾
- **Even data playing field, driving service competition** – The CDR will also provide access to larger data sets for smaller businesses, allowing them to better compete against businesses with data monopolies. This will also reduce barriers to entry for goods that require a large volume of consumer data to drive personalisation, leading to better products that allow them to capture more data.⁽⁴⁰⁾

Competition impact is assumed to derive from sharing data between sectors. While cross-sectoral competition may occur, this will be likely dependent on specific products and sector combinations, limiting the ability to predict competition patterns.

Innovation impact

A broad approach to the CDR will also stimulate innovation across the economy. More specifically the CDR will:

- **Stimulate new use cases** – Cross-sectoral data will also lead to new consumer use cases from previously inaccessible data sets. Uplifting business productivity or consumer benefit through new use cases will stimulate the economy through greater spending.
- **Driving process improvement** – Data is unique as it is 'non-rivalrous', i.e., it can be used multiple times without being depleted. Based on this, the low costs of porting/replicating data, and declining costs in storage, democratising access to data can enable data-led innovation.⁽⁴¹⁾ The CDR will enable businesses to rethink business models to engage customers.
- **Reinventing customer acquisition and retention** – By democratising access to consumer data the CDR lowers data acquisition costs thereby increasing return on investment on marketing efforts and higher return on investment on products tailored on consumer data.⁽⁴²⁾ Many of these processes will automate or complement previously labour intensive tasks.

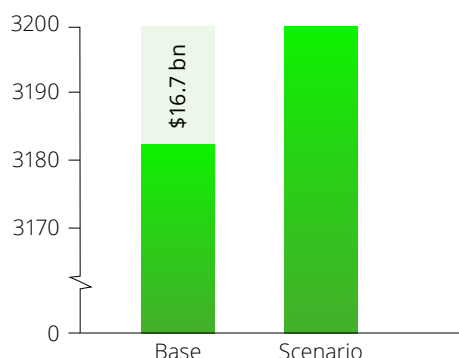
Innovation impact is more likely felt in cross-sectoral data sharing rather than intra-sectoral data sharing due to enabling new use cases. Therefore, innovation has been modeled in sectors that experience poor access to quality consumer data.



Economic impact

Modelling by Deloitte Access Economics estimates that Australia's economy would be approximately AU\$16.7 billion larger in 2043 if the CDR extends to all sectors in the economy.

Estimated real GDP (AU\$ billions) in 2043



Source: Deloitte Access Economics

CGE modelling reveals that the difference in real output from baseline to CDR expansion grows every year, laddering to nearly \$17 billion by 2043.

For comparison, digital reporting is estimated to create \$7.7 billion extra GDP annually on average.⁽⁴¹⁾

A separate Productivity Commission report estimates \$80 billion in economic growth from 28 policy recommendations.⁽⁴³⁾

Whilst both studies modelled different time periods, the CDR is expected to create \$17 billion in the year 2043 with **only one reform – applying a unified CDR standard across the economy.** This will be driven by primary effects from competition and innovation shocks as well as secondary effects - higher productivity prompts economic activity across the economy.

Compared to the baseline scenario, Australia would be...

\$16.7 billion

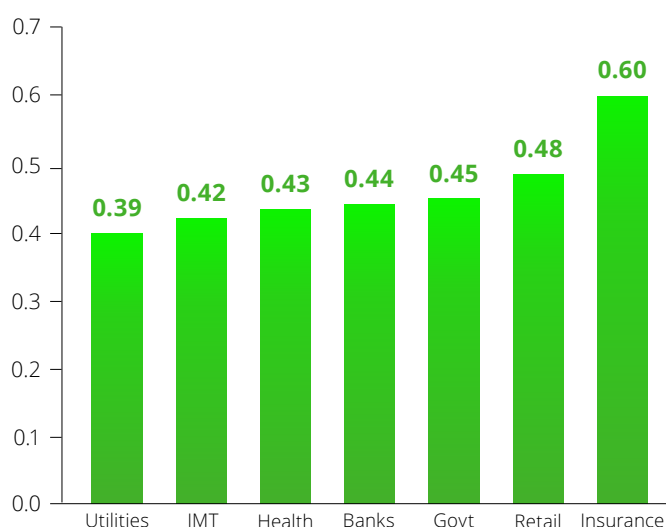
larger in real GDP terms if the CDR expanded to sectors beyond banking and energy.

The impact of greater productivity, competition and innovation from a CDR expanded to multiple sectors is also estimated to deliver a net gain of...

46,790

 full time employees above the baseline scenario.

Percentage gain in real GDP relative to baseline (2043) – subset of sectors



Source: Deloitte Access Economics

- Relative to sector size, insurance is expected to record the largest growth in real output (0.6%) when compared to the baseline scenario
- Retail trade reacted moderately to both competition and innovation, and was expected to have high secondary impacts – as the economy becomes more productive there is a multiplier effect that results in more spending on retail goods
- Government and health sectors grew strongly in response to better access to quality data (0.45% and 0.43% respectively), providing potential to innovate and improve both social and economic outcomes
- There were also large secondary impacts on sectors like manufacturing and construction from improved productivity driving investment in the economy.

Competition impact

Improving competition in all sectors – not just banking and energy – is expected to stimulate a...

\$3.7 billion

net gain to real GDP in 2043. This is nearly a quarter of the total expected net gain to GDP from a CDR expansion scenario.

The economic stimulation from greater competition would also lead to a net gain of...

11,100 full time employees

in 2043, with higher productivity and greater spending in the economy driving stronger demand for jobs.

Innovation impact

The **innovation benefits** from cross-sectoral data sharing would generate a...

\$13 billion

net gain to real GDP in 2043, approximately three-quarters of the total net gain to real GDP from a CDR expansion scenario.

Higher revenue – driven by greater innovation and productivity – along with higher spending is expected to drive stronger demand for jobs, leading to a net gain of...

36,000 full time employees

in 2043 from innovation alone.





Broader benefits

Outside of macroeconomic benefits, the CDR will also improve outcomes for social programs and health outcomes.

Improved social outcomes through data accessibility for social welfare programs

- Greater opt-in citizen data sharing through the CDR could improve outcomes of social welfare programs. Without consistent consumer data tracking, social welfare programs currently 'fly blind', lacking the ability to track the effectiveness of their programs.
- Data sharing where citizens volunteer their data (e.g., criminal history, health records, social welfare access) can help social welfare programs detect risk factors for poor social outcomes, automate outcome tracking and then reshape their programs to achieve better outcomes (e.g., measuring re-offending trends, health outcome past a certain number of days, etc.). Tracking will also support the capacity to raise funds, for example from social impact investors, by demonstrating effectiveness.
- Improving social outcomes in the community improves the quality of life for those living in the community. For example, reducing reincarceration rates allows governments to increase spending on other public goods of value to the community, and improves social cohesion through less crime/anti-social behavior.

Case study

The Justice Data Lab was established in 2018 in the UK to share citizen data on criminal convictions to NGOs focused on reducing re-offending rates. 'The Clink' is a vocational training program that provides prisoners with skills and routes to employment. By accessing the Justice Data Lab's data on their participants, 'The Clink' has been able to show participants in these programs committed 15 fewer offences than an untreated comparison group.⁽⁴⁴⁾ Access to outcomes-based data in a fashion similar to the CDR allows 'The Clink' to measure the effectiveness of this program and make data-based decisions to improve outcomes.

Better outcome tracking for anti-recidivism programs would help Australia reduce half of the annual \$5.2 billion spent on Australian prisons from returning prisoners.⁽⁴⁵⁾ This highlights the role of data sharing and transparency in its effectiveness to drive significant cost savings and create positive social change, in this case, within the criminal justice system.

Improved patient outcomes with increased data access

Data sharing through the CDR can improve patient outcomes by leveraging consumer data to deliver better telehealth experiences, increase the accuracy of diagnoses (e.g., leveraging new AI early diagnosis technology) and personalise patient experiences. Practically this could facilitate the sharing of primary source data for a citizen's medical history, a consistent view of their risk factors/ family history and external health factors e.g., support networks or social welfare support programs).

Case study

Propeller Health provides an example of how sharing consumer health data in real time can improve health outcomes. Propeller Health produces an inhaler that monitors inhaler usage and GPS location of asthmatics. Users are able to see this data and receive tailored prompts, reducing emergency room visits by 57% and rescue inhaler use by 18.5%. For instance, machine learning algorithms are used to provide a forecast of a patient's health based on triggers such as high smoke levels in the area.

This data can be ported to healthcare providers to provide a comprehensive and accurate picture of the patient's condition, helping to personalise and improve treatments. Improving medication adherence will lead to better health outcomes and help reduce the large-scale costs of failed medication adherence for chronic conditions: US\$100-US\$289 billion per year in for the U.S. health-care system.⁽⁴⁶⁾

Further, a more sector encompassing CDR will empower consumers by enabling more secure and informed decisions throughout their lives.

Improved security and convenience for consumers

CDR data sharing reduces the volume of data that is at risk of a security breach by reducing the need to replicate data across organisations. As such, there is a lower economic cost of fraud, cyber security breaches and consumer pains from data breaches.

Further, the OAIC reported that 84% of consumers want more control over the collection and use of their information,⁽⁴⁷⁾ which indicates returning control of personal data to consumers through the CDR could bring a variety of non-economic benefits.

These benefits are estimated in a UK study, which suggested individuals would forego savings of around 5-10% on weekly shopping, monthly electricity and health insurance to have their data rights protected by the GDPR.⁽⁴⁸⁾

Case study

SingPass, launched in 2003 in Singapore, exemplifies these benefits as a state developed digital identity. For example, consumers can use their SingPass to verify their ID when opening a bank account, reducing transaction times by about 80% and limiting the risk of identify fraud (which can occur if a fraudster uses a stolen passport or license to open a bank account).⁽⁴⁹⁾ Additionally, SingPass provides APIs for businesses to access consumer data securely to gather information such as personal identifiers, housing information, occupation and vehicle information. Private sector access to SingPass APIs has extended outside of banking to transport, healthcare and ecommerce to name a few. SingPass enables TransitLink customers to easily authorise their concessionary status, payments and top up processing for customers for public transit services.⁽⁵⁰⁾ SingPass is also used to send information to the transport authority to help manage demand across the transit system. Another company using SingPass is Carousell, a Singaporean consumer to consumer marketplace, which uses SingPass to simplify identification in onboarding while leveraging existing trust in SingPass infrastructure.⁽⁵¹⁾

Improved decision making for complex life objectives

- Combining data sets from different sectors through the CDR can integrate approaches to service delivery that are relevant to the complex decisions consumers face throughout life.
- Life-journey models could simplify the factors surrounding complex decisions by minimising time spent collecting and analysing information from multiple touchpoints. This can result in better outcomes for society in a number of areas that involve complex problems.
- Use cases could include better planning for retirement to management of secondary education decisions. For example, knowing how much a change in job or choice of degree will likely impact future superannuation could help individuals navigate these difficult decisions, thereby improving a consumer's quality of life.
- Enabling access to consumer data for businesses of all sizes will allow greater innovation of use cases like this across the economy.

Case study

Uber Travel, launched in late 2022, enables seamless travel for riders to see all legs of their travel itinerary such as flights, hotels and rides via the Uber interface. Riders can link their travel plans from their emails and let Uber Travel consolidate and plan an easy to digest travel itinerary.

Cross-sector data sets enables this technology and supports complex decisions to be made for consumers in real time. By combining data on drivers, flight journey and accommodation, Uber Travel organises transport options across riders' itineraries to simplify the complexity and stress of planning a holiday.

Using new data from other sources Uber can provide more value to consumers by linking its core value to consumers in meaningful and relevant ways. In 2022, Uber made \$14 billion revenue from ride-hailing, and \$10.9 billion from mobility.⁽⁵²⁾



Chapter 5

Recommendations

Learning from the experience of implementing the CDR to date, policymakers should explore how more value could be realised faster.

In particular, three areas are proposed to shift course for the CDR:

- **Ensure that consumers see value** – increase the desirability of CDR for consumers by focusing initially on major life objectives
- **Make room for innovation** – Incentivise businesses to create new and differentiated products with the CDR and provide them with the tools to do so (e.g., a ‘super sandbox’)
- **Government to lead the way** – Inspire industry and international involvement with the CDR by committing government data sets and efforts towards its growth.

These building blocks will ensure that the CDR can move at pace and deliver tangible value to consumers.



Implications

As the previous chapters articulate, a bold new direction in CDR approach would deliver significant value to Australia and Australians more broadly.

Chapter 1 | CDR success

Without change, current issues with the CDR will persist – The current plan forward (i.e., stopping implementation at energy and banking sector) does not seize the opportunity available with the CDR in meeting its objectives (i.e., low consumer adoption, limited business innovation and slow expansion into other sectors).

Going broad as a next step matches international approaches – As the UK and Brazil look to expand outside of banking with their data portability regimes, Australia risks falling behind if the CDR continues to deepen in banking and energy.

Australia is primed to build on the existing CDR foundations – Continued hurdles in CDR rollout will not establish Australia as a global standard and forego consumer benefit and improved productivity. On the flipside, Australia is also well placed to receive these benefits given investments in digital economy infrastructure (e.g., New Payments Platform, NBN, 5G).

Chapter 2 | Where is my data?

Focusing on banking and energy only captures part of the pie – Focusing on banking and energy ignores a wealth of data collected by other sectors. Public administration & safety and software and information services businesses in the technology sector offer large stores of unique consumer data. This is where consumer value will be unlocked.

A banking and energy focus does not account for data dynamism – Prioritising trusted primary sources of unique data sets can reduce inconsistencies brought on by the introduction of new cross-sectoral datasets. A primary source of a data set provides the most accurate and reliable view of the consumer. By expanding the scope to include the cross-sectoral data sets, the CDR can reduce effort in managing inconsistencies brought about by differing sectors capturing different versions of data and creates efficiencies in sharing data across the economy.

Chapter 3 | Focusing on the consumer

Cross-sectoral data sets deliver higher value – Consumers derive the most value from products that connect the experiences in their life objectives and events. Designing for life objectives and events will require cross-sectoral data sets to create experiences. Australia is indefinitely leaving consumer value on the table by only framing its CDR adoption around sector designations.

Awareness and innovative use cases resolve obscurity of CDR – Higher visibility of real-world use cases for the CDR will define a higher reward to risk ratio, easing consumer hesitation. As the CDR becomes ingrained into consumers lives, consumers will become more comfortable adopting CDR products.

Government has a continued role in stimulating business innovation – In addition to exposing targeted government data sets, hackathons, an experiment and learn culture and 'super sandboxes' can be deployed as a means of reinvigorating innovation through CDR.

Chapter 4 | Economic modelling

The economic opportunity cost of continuing focus in banking and energy is \$16.7 billion and at least 47,000 new jobs – With close to \$13 billion modelled in innovation benefits derived from cross-sectoral data sharing, the CDR's current expansion plan has significant opportunity cost. Broadening the scope will have a network effect amongst data providers, driving a more valuable proposition for consumers and thus increase adoption.

Innovation benefits are significant – To unlock innovation, CDR needs to enable cross-sectoral data sharing. Benefits that are borne from innovation will drive a more valuable proposition and lead to increased adoption.

Non market benefits rely on innovation – Many of the non-market benefits of CDR will likely be reduced if cross-sectoral innovation is not unlocked. Innovative CDR data sharing will give organisations and policy bodies increased accessibility to data that can improve the wellbeing and quality of life of Australians.



Focus areas

To shift course for the CDR, policymakers should explore three focus areas:



1. Incentivise consumers

- Research consumer life objectives and events to frame the CDR rollout
- Shift the CDR's rollout focus from sector designation toward life objective and event-based designation
- Supplement a stronger consumer value proposition with targeted awareness campaigns
- Explore the primary source of commonly used but unique data set types (e.g., digital identification)
- Create incentives for trusted brands to use CDR (and communicate success case studies)
- Explore monetisation frameworks that allow consumers to charge for their data.



2. Facilitate innovation

- Adjust the CDR's regulatory approach to reduce compliance burden by rebalancing a focus on regulatory compliance vs spurring business innovation
- Build the roadmap and test and learn with initiatives to stimulate innovation (e.g., super sandbox)
- Explore API monetisation frameworks to create business incentives to enrich the CDR.



3. Government to lead the way

- Explore fast tracking public administration data sets for CDR inclusion to underpin a life event first rollout
- Explore how to create exclusive value for the CDR (e.g., sunseting screen scraping)
- Explore interoperability of Australia's data portability standards
- Explore and iterate the sandbox environment.

Incentivise consumers

To address low adoption of CDR enabled products, policymakers need to focus the CDR's rollout around consumer life objectives and build their confidence in the CDR's infrastructure.



Focus on building consumer interest, confidence, awareness and eventual adoption of the CDR.

Areas to explore	Detail
Research consumer life objectives and events to frame the CDR rollout	<ul style="list-style-type: none"> • Conduct customer research with industry groups (and/or consumers more broadly) to develop a robust list of significant life objectives and events, current pain points and relevant sector data sets that could support the experience • Develop an implementation roadmap focused on consumer life objectives and events.
Shift the CDR's rollout focus from sector designation toward life objective and event-based designation	<ul style="list-style-type: none"> • Within each life objective and event, identify and prioritise relevant sector data sets that support the journey (e.g., prioritising credit approvals history as a subset within banking data to support the consumer objective of owning a home) • Explore an optimal mix of speed vs fidelity for data sets within designated sectors (e.g., deliver action initiation in banking across data fields in phases so as not to slow expansions into other sectors).
Supplement a stronger consumer value proposition with targeted awareness campaigns	<ul style="list-style-type: none"> • Complete consumer research to understand hesitations that consumers may have with the CDR and ideate potential solutions • Identify channels to best reach specific customer segments with 'CDR hesitancy' • Investigate the role of the regulator, policy agency and large corporates in building positive images of the CDR to the consumer.
Explore the primary source of commonly used but unique data set types (e.g., digital identification)	<ul style="list-style-type: none"> • Identify the key primary sources of data sets used to support prioritised life objectives and events • Conduct feasibility analysis of unlocking the primary source of data sets economy-wide, weighing speed to market against data field fidelity within these data sets (e.g., digital identity and data fields required for an economy-wide digital identity solution).
Create incentives for trusted brands (and communicate success case studies)	<ul style="list-style-type: none"> • Create incentives for trusted brands to innovate using CDR, thus building trust and credibility with consumers • Develop communications to showcase trusted brand CDR case studies • While the CDR currently publishes real time data on CDR invocations across data holders and other related metrics, focus should be shaped around more effectively communicating this information to consumers to then build stronger familiarity and comfortability with the CDR as a data sharing solution.
Explore monetisation frameworks that allow consumers to charge for their data	<ul style="list-style-type: none"> • Explore industry demand and regulatory oversight schemes for allowing consumers to charge businesses for access to their data • Explore API requirements and standards to supplement existing CDR data transfer.

Make room to innovate

To address low business innovation, policymakers need to reduce the onerous burden of data set compliance for the CDR and create incentives for businesses to lead the innovation charge.



Reduce regulatory burden, create innovation incentives and empower industry to lead innovation challenge rather than relying on government to define innovation path forward.

Areas to explore	Detail
Rebalance policy focus from compliance to spurring business innovation	<ul style="list-style-type: none"> • Design and implement data set nomination process which will allow businesses to put forward desired data sets for CDR inclusion to enable new products they'd like to design • Design process to explore contestability of nominated data sets (i.e., do other businesses also see value in data sharing for a nominated data set to then justify the competition benefits against effort required to implement CDR data sharing?) • Engage stakeholders across data sharing ecosystem (e.g., data sharers and recipients).
Build the roadmap and test and learn with initiatives to stimulate innovation (e.g., super sandbox)	<ul style="list-style-type: none"> • Apply design-thinking methodology to frame innovation initiatives (consult users, ideate, minimum viable product and iterate) • Identify potential costs or revenue generating opportunities of push-style policy to spur innovation such as an effective sandbox environment or across incubators, challenges, experiment and learn culture • Determine potential funding vehicles across government (state and federal).
Explore API monetisation frameworks	<ul style="list-style-type: none"> • Consult stakeholders (industry, consumer lobby groups and ACCC) to evaluate the competition / innovation impacts of monetising data that has been consumer data that has been significantly transformed by business, creating proprietary ownership of data • Define regulatory appetite for API monetisation regulation • Define and implement rules, processes and principles behind Consumer Data API transformation.

Government to lead the way

To build consumer and business demand for the CDR, Government will need to lead the charge and evidence benefits by opening up consumer data sets.



Inspire industry and international interest in the CDR by integrating government assets into the CDR and establishing Australia as an open data leader.

Areas to explore	Detail
<p>Explore fast tracking public administration data sets for CDR inclusion to underpin a life event first rollout</p>	<ul style="list-style-type: none"> • Identify the primary data set sources across all levels of government (federal, state and local) that are most relevant to prioritised life objectives • Engage state and local government to encourage sharing their agency data on the CDR explaining potential cost savings for government and economic impact for wider society • Conduct feasibility analysis of unlocking the primary source of data sets economy-wide, weighing speed to market against data field fidelity within these data sets (e.g., digital identity and data fields required for an economy-wide digital identity solution) • Make government data sets available to companies that are data holders.
<p>Explore how to create exclusive value for the CDR (e.g., sunsetting screen scraping)</p>	<ul style="list-style-type: none"> • Identify current scope of data sharing technologies which could be replaced by CDR data sharing (e.g., screen scraping, manual data sharing) • Develop and select policy options to wane use of current data sharing technologies to be replaced by the CDR (e.g., outright bans, transition roadmaps, industry best practice use of for use of CDR etc.) with a view on expected consumer and business impact.
<p>Explore interoperability of Australia's data portability standards</p>	<ul style="list-style-type: none"> • Engage regulatory counterparts in other jurisdictions to discuss alignment of data portability standards • Explore relative value of aligning data standards with established data portability players (e.g., UK, Brazil, etc.)
<p>Explore and iterate the sandbox environment</p>	<ul style="list-style-type: none"> • Identify low risk government consumer data sets suitable to be opened up to industry players to innovate new consumer use cases (e.g., business registration, births, deaths and marriages) • Explore how to mitigate consumer cyber security and privacy risks (e.g., deidentification of data, generating meaningful dummy data using Generative AI) • Define an engagement plan to build awareness and participation from industry players (e.g., large corporate, startups etc.) • Design and fund incentives to reward participation in regulatory sand boxes (e.g., funding support for the most promising use cases, hackathons for cross-sectoral use cases) • Explore the 'super sandbox' sitting (partially or fully) to the side of the full regulatory burden.



Design principles for the next phase of CDR's evolution should include speed, value, and trust as well as being grounded in life objectives and events and increasing incentives for business.

From...

Go deep

Focusing on further data field fidelity in banking and energy.

Relying on awareness to drive adoption

Solely relying on awareness or brand marketing campaigns to address low adoption of the CDR.

Duplicating views of data

Capturing duplicate views of consumer data from multiple sectors.

Pull incentives for regulatory compliance

Enforcing the rollout of the CDR by punishing laggards or poor performers.

Expanding the CDR based on sectors

Expanding the CDR based on sector designations.

Policy relying on business to provide data and value for CDR

Government data not prioritised for data sharing through CDR.

To...

Go wide (selectively)

A new implementation roadmap that chooses data fields to go selectively deep on while also targeting the largest data lakes.

Building a compelling value proposition that drives adoption

Primarily addressing low consumer adoption of the CDR by creating a value proposition that creates undeniable benefits for the user.

Establishing primary sources of data as a single source of truth

Defining a single originator for types of consumer data that act as a source of truth across the economy (and that updates dynamically to make it easier for companies to innovate with the CDR).

Pushing and pulling to deliver on the CDR

Supplementing pull style incentives with incubators, challenges, experiment and learn culture or regulatory sandboxes and allowing consumers to share data held by the government with other data holders to reduce the cost to innovate.

Expanding the CDR based on life objectives

Expanding the CDR through prioritising consumer life objectives and events and prioritising sector designation within these to ensure value for the consumer.

Government as the leaders in data sharing

Prioritising government data sets to be shared (as the biggest holder of consumer primary data).

Appendix



Identifying data holding types

To identify the different sectors in Australia where consumer data are held, and which organisations are the trusted-source generators of this data, the following steps were used:

1. Identify the **sectors** (using ANZSIC categories) that have direct interactions with consumers (14 out of 18).
2. Identify the **types of consumer data** generated based on a number of sources - Deloitte research (e.g., privacy policies, desktop research), internal workshops with CBA, and the OECD *consumer data typologies* framework.⁽⁵⁰⁾ This took an approach that aimed to be sufficiently comprehensive in covering unique data types that could be considered valuable, while also broad to avoid inflating the importance of sectors collecting high quantities of less useful data types.
3. Group the consumer data as **static or dynamic** – dynamic has been defined as data that is changed on a regular basis (on average). These were categorised based on discussions with CBA.
4. Select at least two sub-sectors in each sector, and an example of **consumer activity** which takes place in the respective sectors.
5. Determine the **type of consumer data collected** from the selected activity. This exercise is undertaken based on the type of data, rather than size of data holdings (cross-checked with privacy statements and subject-matter experts). Further, data collection by a sub-sector is verified with subject matter experts and a privacy policy for an example business in each sub-sector.
6. Identify the **most important, primary source** of each consumer data. This was developed in discussion with CBA.

Further refinement and limitations

A preliminary data taxonomy was developed using the approach outlined on the previous page. This was discussed and workshopped between Deloitte and CBA teams. Additional steps were undertaken to further refine the data taxonomy.

Data taxonomy development process

Areas	Refinements	Notes
Data categories	Data categories which were based primarily on the OECD framework were revised (see diagram below).	Revised categories were simplified and made more consumer centric. For example, the distinction between social and behavioural data was confusing for what is mostly online data, resulting in these types being merged into the online category.
Re-ordering of categories	Consider the order of how the data categories were displayed.	The order was revised to make it more intuitive.
Data types	Additional data types were suggested and discussed during a workshop. Deloitte considered the new additional data types, and included new data types to the revised categories (see table on page 56).	While the list is non-exhaustive, the aim is to capture as comprehensive as possible a full suite of data types within the taxonomy.

Comparison in data categories between OECD data taxonomy and Deloitte data taxonomy





Limitations

- Equal weighting given to both static and dynamic data types, sensitive and less sensitive data, high and low volume data etc.
- The data taxonomy does not cover all data types.
- The data taxonomy does not include metadata, i.e., data that is attached to another data type (e.g., location when a person posts a photo on social media). This was assumed to be included within the general data types listed on the slide.
- The data taxonomy does not include derived data – new data reproduced from raw data to produce insights in a firm.
- The data taxonomy is not based on volume or data or value of data.
- The data taxonomy is not based on generating data or trusted type of data, simply collecting data.
- The framework is designed based on exemplar activity from a sub-sector in each sector. At least two-subsectors are examined in each sector.
- This is, in most cases, a simplistic representation of consumer interaction with the products or services.
- In reality, the type of data collected and held will depend on the context.

Notes

- Category and data type names were simplified to use more plain language that is easily understood by the report reader. For example, biometric data was aggregated into 'identifying' data, and 'social security' became 'tax file number.'
- The categories aims to relate to consumers' key life pivotal moments.
- Additional data types (next page) were identified to capture potential data that are less shared currently and could be of high value in future (e.g., energy usage, vaccination).

A consumer data typology helps to map common consumer data types shared across sectors and helps uncover where consumer data resides.

Defining a framework

To understand where different types of consumer data are captured in the economy, a common definition of data types is required.

Leveraging the OECD's *consumer data typologies* as a base, Deloitte has created a consumer data taxonomy that groups together 46 distinct consumer data types across six categories⁽²⁴⁾. This aims to be sufficiently comprehensive in order to cover unique data types that could define the consumer, whilst also broad enough to avoid inflating the importance of sectors collecting large volumes of less useful data types.

Some specific exclusions that have been made in this framework include:

- **Derived data** – Manipulations of raw data to produce insights (e.g., the spending habits of a debit card consumer from their transaction history).
- **Metadata** – Data that describes and gives information on other data (e.g., location when a person posts a photo on social media). This was assumed to be included within the general data types listed on the slide.
- **Data generated** – Data collection was the focus for the taxonomy, as data generated that is not collected cannot be shared through CDR.

Mapping consumer data types to sectors

- This consumer data taxonomy has then been used to map data capture across different sectors in the economy.
- A shortlist of sectors has been chosen from the ANZSIC category list based on whether a sector is consumer-facing (e.g., mining is excluded), creating a total of 14 consumer-facing sectors.
- To examine how each sector captures data and what data they do capture, example organisations within sectors and their subsectors have been selected as representative for the purpose of this report. Data sharing policies and expected data field types have been analysed in collaboration with industry subject matter experts.

Consumer data taxonomy		
Demographic and identifying	1. Telephone/ emails 2. Age/DOB/ gender 3. Name 4. Income 5. Employment status 6. Employment type 7. Birth/death records 8. Relationship status 9. Race	10. Citizenship 11. Sexual/political preference 12. Fingerprint 13. Facial/voice 14. Social benefits TFN 15. Passport/Visa 16. Demerit points/ fines 17. Address 18. Police records 19. Housing status
Finance	20. Transactions 21. Taxation information 22. Assets/liabilities 23. Fraud victim/ activity	24. Government assistance 25. Insurance claims 26. Credit score
Health	27. Health conditions 28. Family details 29. Prescription	30. Vaccination 31. Exercise/sleep activity 32. Health records
Behavioural/ Usage	33. Product characteristics and preferences 34. Energy usage	35. Other consumer product usage (vol/frequency) 36. Communications
Online	37. Blogs 38. Photos 39. Online activity 40. Online purchases	41. Geolocation 42. Social network 43. Interests (likes/ dislikes)
Education	44. Education transcripts 45. Education level	46. Extracurricular activities.



Mapping between sector classifications for data holdings type and data holdings volume analysis.

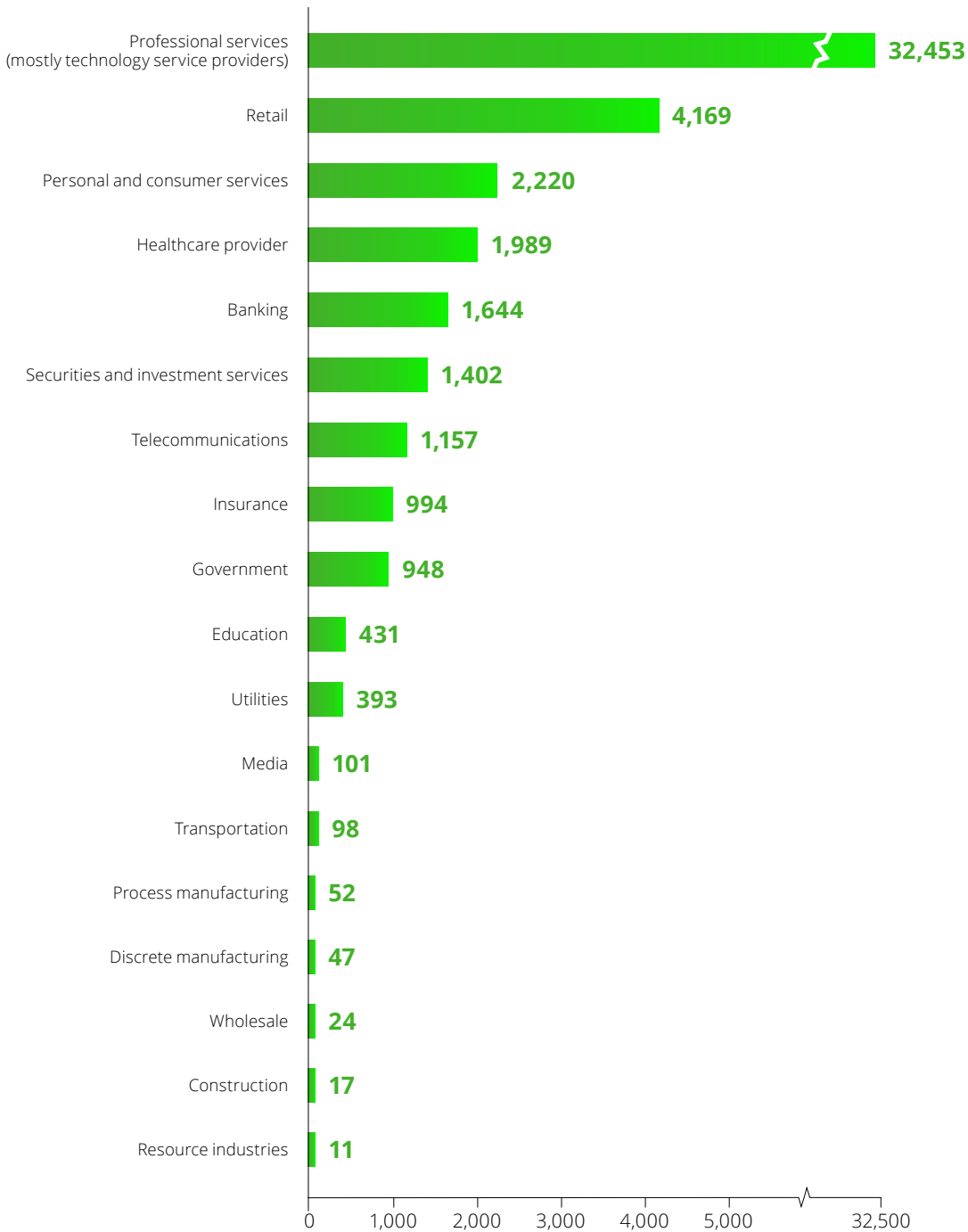
While data holdings type analysis selected a shortlist of sectors from the ANZSIC category list (and two example business types within those ANZSIC categories for illustrative purposes), the data provided by IDC on data holdings by volume uses a different sector categorisation. For clarity, an approximate mapping of ANZSIC to IDC sector categories is provided here. This is not an exact mapping, and there is a degree of overlap between these sectors.

ANZSIC category	IDC category	Example business types
Information media and telecommunications	Software and information services	Telecommunication provider, social media platforms
	Media	
	Telecommunications	
Financial and insurance services	Banking	Banks, insurer
	Insurance	
	Securities and investment services	
Rental hiring and real estate services	Personal and consumer services	House rental agency, car rental agency
Retail trade	Retail	Storefront retailer, online retailer
Accommodation and food services	Retail	Hotel, restaurant
	Personal and consumer services	
Health care and social assistance	Healthcare provider	Healthcare provider, pharmacy
Education and training	Education	Higher education, vocational trainer
Public administration and safety	Federal/central government	Federal, state, local government
	State/local government	
Arts and recreation services	Personal and consumer services	Event ticketer, attractions
Electricity, gas, water and waste services	Utilities	Electricity provider, local government council fee collection
Transport and post	Transportation	Postal service, airline
Construction	Construction	Builder, commercial design service
Administrative and support services	Other professional services	Recruiter, child care provider
	Personal and consumer services	
Professional scientific and technical services	Other professional services	Accountant, trade services
Agriculture fisheries and forestry	Resource Industries	Not included in data holding type analysis
Mining	Resource Industries	Not included in data holding type analysis
Manufacturing	Discrete manufacturing	Not included in data holding type analysis
	Process manufacturing	
Wholesale trade	Wholesale	Not included in data holding type analysis

Source: IDC's Worldwide Global DataSphere and Global StorageSphere by Vertical Industry Taxonomy, 2023, Doc # US51342123, Nov 2023

Comprehensive data from chapter 2

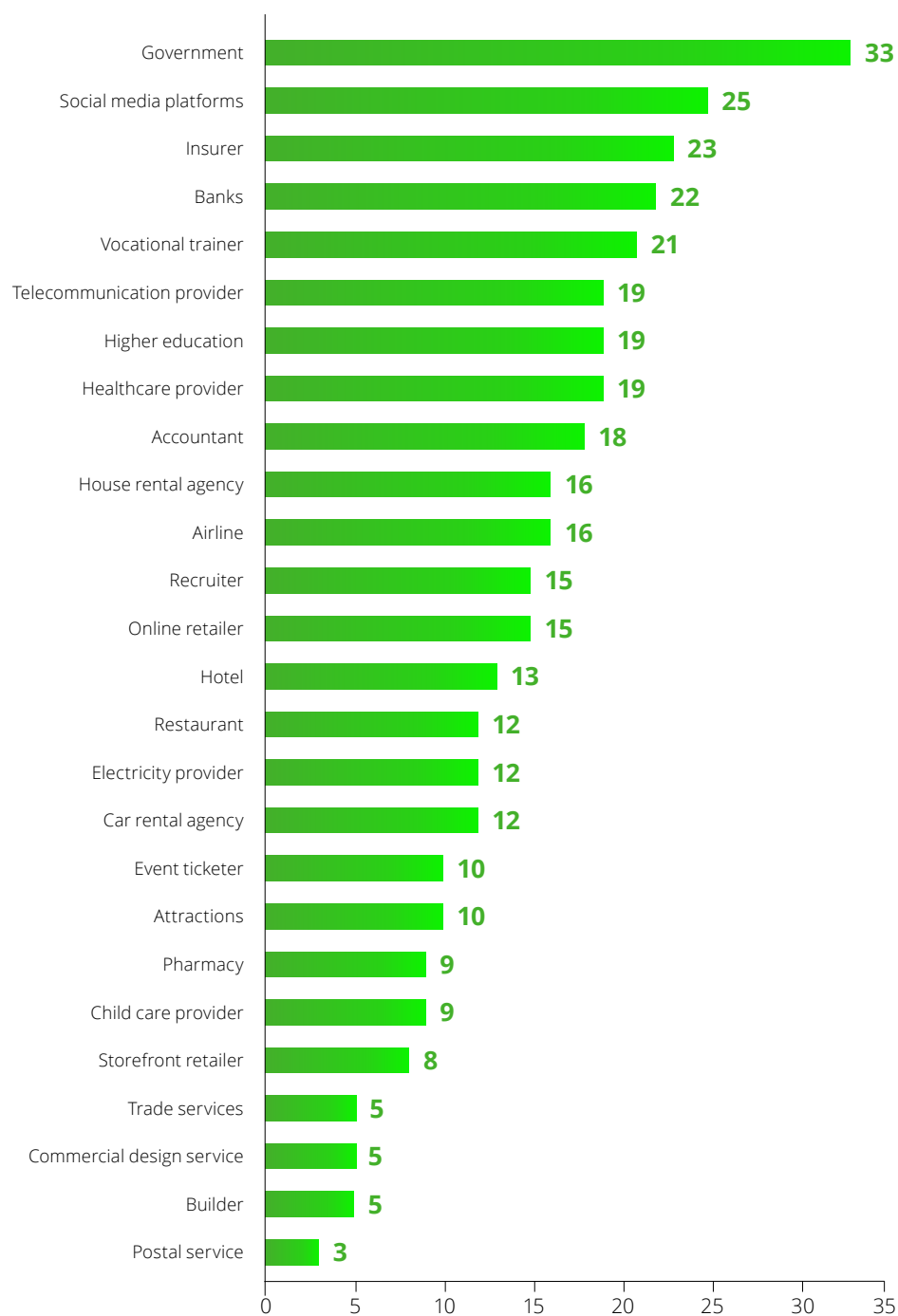
Volume of data stored (total petabytes), consumer data only, by sector – Australia (March, 2023)



Source: IDC's Worldwide Global DataSphere and Global StorageSphere by Vertical Industry Taxonomy, 2023, Doc # US51342123, Nov 2023



Number of data types collected by business type - top 6



Source: Deloitte Access Economics

Note: this graph analyses data collection by business type, where at least two example business types were used for each ANZSIC sector analysed.

Competition impact assumptions

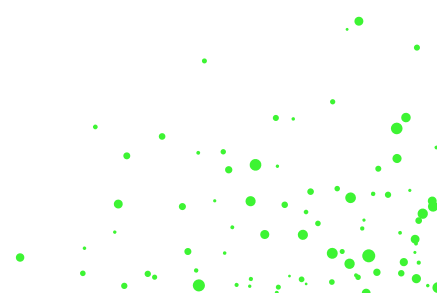
Impact estimates for the CDR on competition & innovation were conducted separately, then combined into an aggregate shock on labour productivity.

Competition

Theory: CDR will allow consumers to share data with third-party providers (TPP) that make price comparisons and switching easier. Switching is also enabled by entry of new firms from reducing the barrier to entry due to access to data. Increased switching will increase competition, leading to greater allocation of resources and therefore higher labour productivity.

Australian Government Treasury recently released a paper that uses markups as the best estimate of competition intensity in a sector to estimate that labour productivity growth was 0.10 to 0.13 percentage points lower per annum on average from 2011-12 to 2016-17 due to increased unweighted markups.⁽⁵³⁾ Deloitte calculations estimate from this relationship that a 1% increase in unweighted markups reduce labour productivity by 0.20 to 0.26 percentage points per annum.

1. To estimate how much markups will change from CDR, we use a rough conversion from the estimated price change. Prices will drop as consumer switching increases, and thus we estimate a relationship between switching and prices. The most data for this is within the electricity and gas sector, which we use to create a fixed effects regression over time of the impact of consumer switching on price dispersion in the sector.⁽⁵⁴⁾
2. To estimate the increase in switching that we expect from CDR, multiple sources were used that demonstrate the proportion of consumers in a sector which considered switching but didn't switch.⁽⁵⁵⁾⁽⁵⁶⁾⁽⁵⁷⁾ This may underestimate actual potential switching if people that haven't considered switching would consider switching in the future if CDR made it easier. The reason for not switching by this cohort is either due to switching/search costs or because there was no better deal. We assume that half of those that considered switching didn't due to switching/search costs. For sectors where this data did not exist (i.e., accommodation, retail and other services), we used an average of the expected increase in switching. Six sectors were assessed overall – electricity, gas, water and waste services, financial and insurance services, retail trade, accommodation and food services, other services and IMT.
3. Multiply 2) by the expected uptake of CDR as only this proportion of people will actually be able to switch through the services provided by CDR. Our estimates suggest a potential uptake of 43%.⁽⁵⁸⁾ This gives expected increase in switching in each sector due to the CDR.
4. By multiplying the average expected increase in switching in electricity and gas markets by the coefficient on switching from 1), we are able to estimate the increase in price dispersion in these markets from CDR. This is then calculated as a percentage saving from the average price currently paid in both sectors.
5. This percentage saving is then multiplied by the expected increase in switching for other sectors relative to the energy sector to get the percentage saving from old price expected in these sectors.
6. To adjust for differences in price dispersion between sectors, an estimate of average price dispersion in a sector is collected. Step 5) is then multiplied by an industry price dispersion relative to the electricity/gas sector. Small sample size may impact this step, as well as difficulty in comparing price dispersion in sectors with different levels of homogeneity in goods/services.
7. We then get an estimated price reduction from CDR, which can be used to reduce sales-weighted markups sourced from the Treasury paper by the same amount (inputting an adjusted Lerner index for banking). This assumes a one-to-one relationship between price and markup, which is a simplification due to data and time constraints.
8. By calculating the change in average sales-weighted markups from Scenario 1 to Scenario 2, we can then multiply this by the relationship with labour productivity from the Treasury paper to estimate the shock to the economy.





Innovation

Theory: CDR will provide data to businesses that allows them to improve their data-decision making capabilities, spurring innovation of new products and more productive production processes that leads to an uplift in revenue.

The 'Demystifying Data' study records 'data maturity' across Australian sectors. This is essentially an organizations ability to extract value from data-driven processes, determined by a number of factors such as data captured and related skills. Organizations are then placed into one of five maturity categories, with 'master' level being the highest. Each progression in the data maturity ladder is associated by 9.5% revenue gain.⁽⁵⁹⁾

1. Record the proportion of businesses in and sector below 'master' level of data maturity. This is the proportion that are yet to capture the revenue benefits from progressing the data maturity ladder.
2. Multiply 1) by the portion of businesses in a sector reporting a lack of access to quality data as a main barrier to improving their data maturity. Assuming that not all reporting this issue are a 'master' level, and not all are below, this is best approach than can be taken. This estimates the proportion of businesses that are yet to capture the revenue benefits from data maturity due to barriers to accessing quality data.
3. Multiply 2) by the proportion of data that is consumer data – estimated at 31.2% by findings purchased from IDC. This assumes that consumer and business quality data have the same weighting of importance to these businesses.
4. Multiply 3) by predicted uptake of CDR as only this proportion of consumer data will be potentially shared. Our estimates suggest a potential uptake of 43%.⁽⁵⁹⁾ This estimates the proportion of businesses that are yet to capture the revenue benefits from data maturity due to barriers to accessing quality consumer data which is expected to be shared from CDR.
5. Multiply 4) by the revenue gains from improving data maturity that is due to better quality data allowing businesses to improve productivity of their existing processes and/or innovate new products. We assume that half of the 9.5% gain in revenue (4.75%) from each level of data-maturity is attributable to this, and the other half to revenue gains from stealing business. We also assume that all reporting data quality as an issue to data maturity progress to 'at least' the next level of data maturity (given that it was listed as a major barrier to this progression). This gives us the average revenue uplift for a whole sector due to businesses being able to access better quality consumer data through the CDR. All ANZSIC sectors were assessed apart from non-consumer facing sectors, including agriculture, mining, manufacturing, construction and wholesale trade.

Limitations

There were a variety of limitations of this approach due to time constraints and data unavailability.

Limitations & considerations	Detail
<p>Estimates provide a 'rough' magnitude and relative impact under 2 scenarios</p>	<ul style="list-style-type: none"> Figures presented are only intended to present an approximation of the magnitude of impact CDR is expected to have – including the relative size between each scenario. This is due to limited data on an economy-wide consumer data sharing regime occurring, leaving a sizeable number of use-cases that would need to be evaluated (many of which have not been invented yet) to understand the potential impact of CDR. Instead, these figures rely on relationships that have been verified from multiple studies, however which have had to be adapted to the specific case of an economy-wide CDR using the available data. This data is generally limited. In the competition shock, for example, finding estimates of potential switching barriers in sectors that could be removed by CDR was found by seeing what proportion of consumers considered switching but didn't. Detailed consumer switching data is limited and for sectors where it could be found an average switching rate was analysed only if consumers could tangibly expect benefits from the CDR. Differences in how the competition and innovation shocks are applied may also be responsible for some sector-level differences. While innovation effects are assessed for all consumer-facing sectors (i.e., excluding mining, agriculture, construction and wholesale trade), competition impacts are only applied to market-sectors where the benefits of competition from data sharing were most pertinent and/or there was available data. (i.e., financial and insurance services (banking and insurance), IMT, retail trade, other services, accommodation and food services and electricity, gas, water and waste services).
<p>The estimates are 'optimistic' of the full potential</p>	<ul style="list-style-type: none"> Estimates may also be optimistic given a predicted uptake of CDR (43%). However this has been derived from the average level of consumer trust across sectors in Australia to handle/use data. Further this is above the current take-up of open banking in the UK (10%-11% of 'digitally-enabled users' after five years), however the results also assume CDR is taken up by all relevant sectors in the scenario that we compare to the baseline.⁽⁶¹⁾
<p>The shocks explored only two avenues of potential economic impact</p>	<ul style="list-style-type: none"> Both shocks only look at one avenue in which competition/innovation can be improved through data sharing. They also operate on uncertain scales of the impact, so it is intended as a potential view of what the impact could be. For example, in innovation we are unsure of how much access to data quality will improve a businesses data maturity, only that the businesses reported it is a barrier to doing so.
<p>The relative size of industry impacts should be cautioned</p>	<ul style="list-style-type: none"> Weightings applied to different sectors for the competition and innovation shock are based on estimates of how competition and innovation would change from CDR. Firstly, these estimates are impacted by data unavailability, which in some cases can overestimate/underestimate the impacts in sectors where assumptions/averages were used for competition. In innovation, the impacts are muted for sectors which already have a high level of data maturity (assuming that they will receive less marginal benefits than those sectors which have lower data maturity) due to the methodology. Further, the secondary impacts in the CGE model lead to large benefits in capital intensive sectors that receive high investment when there is economic expansion (e.g., manufacturing and construction). Lastly, the weightings of the competition shock are adjusted for the relative size of the sector, attributing higher labour productivity impacts to sectors that are larger.
<p>CGE results</p>	<ul style="list-style-type: none"> The IVA figures are presented in 2018/19 AUD dollars. They do not consider the costs to businesses of the CDR, such as investment into data infrastructure required to facilitate sharing.
<p>Rebasing</p>	<ul style="list-style-type: none"> The CGE modelling provides growth rates for predicted real GDP output from 2023 to 2024 in the baseline and scenario. To use the most accurate data, these growth rates are based to the 2022 GDP output in Australia from ABS (in chain volume measure and seasonally adjusted).



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