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LOOKING UNDER THE LAMPPOST OR SHINING A NEW LIGHT: NEW DATA FOR UNSEEN CHALLENGES

Jonathan Hambur, Maxine Montaigne, Stephanie Parsons and Elise Whalan [1]

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1 Maxine Montaigne, Stephanie Parsons and Elise Whalan are in Macroeconomic Group and Jonathan Hambur was formerly in Macroeconomic Group, The Treasury, Langton Crescent, Parkes ACT 2600, Australia. Correspondence: Elise.Whalan@treasury.gov.au. We thank Mark Cully, Robert Ewing and Lauren Ford for their comments, and colleagues in Structural Analysis Branch for their assistance.

Manager
Media Unit
The Treasury
Langton Crescent
Parkes ACT 2600
Email: media@treasury.gov.au

ABSTRACT

Making better use of data is critical for Government to respond to economic, social, and environmental challenges with evidence-based policy. COVID-19 presented a unique set of policy challenges requiring rapid diagnosis and responses. The Department of the Treasury (Treasury) responded quickly by leveraging new data sources and capabilities to provide relevant and timely advice to Government. Treasury also formed innovative new partnerships that have expanded its data capability. This paper uses Treasury's COVID-19 experience as a case study to demonstrate the value of data to policymaking and discusses potential future directions for investment.

1. INTRODUCTION

The COVID-19 pandemic has been an extraordinary challenge for the global economy, affecting every country and community in the world. To handle the dual health and economic shocks, governments organised a coordinated response that was unprecedented in its scale and speed of implementation. Significant restrictions on economic activity were introduced to support public health outcomes, while financial support was provided to lessen the impact on businesses and households and limit longer term economic scarring.

The Australian Government has committed $337 billion (or 16.3 per cent of GDP) in direct economic and health support since March 2020 (The Commonwealth of Australia 2021). This has been supplemented by additional fiscal support from state and territory governments and monetary policy support from the Reserve Bank of Australia. The effectiveness of these policy actions is evident in the fact that the health and economic impacts of COVID-19 have been much less severe in Australia than in other countries.

The Australian Government took a deliberately data-led approach to COVID-19, harnessing expertise and forming partnerships with the private and non-government sectors to drive a rapid and effective response to the pandemic (Child et al 2020). The Australian and state and territory Governments worked together to establish pathways for sharing critical data to support the COVID-19 response and recovery, including navigating legislative and privacy requirements (Australian Government 2021). Crucially, the Department of the Treasury (Treasury) recognised early that existing data assets were not sufficient to meet these new challenges and limited Treasury's ability to provide useful analysis and solutions, much like the proverbial person looking for their keys under the lamppost because 'that's where the light is'.

This paper discusses how Treasury has leveraged new data sources and capabilities and formed innovative partnerships to be agile in its response to COVID-19. It considers the increasing importance of data to governments and the global economy and describes some of the new datasets that helped Treasury and the Australian Public Service (APS) effectively respond to COVID-19. It also discusses the potential for data to improve policy outcomes going forward, and how this can be facilitated by APS data policy and future investment in data.

2. DATA AS A GROWTH DRIVER

There has been exponential growth in the volume of data

Over the past two decades, the digitisation of manual processes combined with the development and uptake of new technology has seen exponential growth in the volume of new data being created. These data are increasingly reported at higher frequencies, lower levels of disaggregation, and with minimal lags. Importantly, advances in computing power and analytical capabilities have facilitated improved analysis of these data (OECD 2014; PC 2017).

Data are increasingly recognised as a form of capital, with a rare and valuable combination of characteristics. For example: data are not subject to physical wear and tear; many people can use the same data simultaneously for a range of purposes (non-rivalry); making more data available generates benefits to third parties (positive externalities); and data can produce new insights when combined with other data (economies of scope).

This suggests there is enormous economic and social value to be extracted from data when they are shared, re-used and re-purposed. Extrapolating work by the McKinsey Global Institute, Lateral Economics estimates the potential value of open data to Australia at almost $64 billion per year (Gruen, Houghton and Tooth 2014). In 2019, another study by Lateral Economics – commissioned by the Australian Bureau of Statistics (ABS) – found that Australia gains $6 in economic value for every $1 spent to generate data from the Census of Population and Housing (Census). Governments have recognised this value through investing in large integrated datasets (for example, the Business Longitudinal Analysis Data Environment and the Multi-Agency Data Integration Project), expanded survey collections, and, increasingly, making use of new sources of private sector data. The Australian Data Strategy outlines a five-year vision for the Australian Government's investments in data to maximise this value (Australian Government 2021).

Administrative datasets often pose new challenges, and require greater capability

It is useful to distinguish between two data generation methods: statistical data collection, where data are collected for research and analysis, and administrative or process data collection, where data are collected for another purpose, such as the administration of a government program or as a by-product of business operations. The latter datasets – which are the focus of this paper – pose unique challenges to analysts and policymakers. These datasets are often very large, highly complex, may not be representative of the population of interest, and may not be as high quality as official statistics. For example, a survey conducted by the ABS will be designed to be nationally representative and have a long time series, but a private sector dataset will reflect the client base of that company and transactions at a particular point in time. Administrative or process datasets can also have a shorter time series, making it difficult to identify trends, while high-frequency data may be subject to greater volatility that needs to be parsed to interpret outcomes and identify turning points (The Economist 2020; Aaser and McElhaney 2021). Moreover, data only provide useful information if analysed properly, but more advanced analytical techniques and high-powered computer systems are needed to evaluate large non-random sample datasets. Investments in advanced analytical capabilities are vital to extracting insights from these new sources of data.

Data sharing is not just ubiquitous, it has become a social phenomenon (PC 2017). But it is important that all parties are comfortable with how their data are used, particularly if personal, sensitive, or commercial details are involved and/or where the data were primarily generated for reasons other than statistical analysis. This is necessary to maintain and secure social license, which can be built through transparency, accountability, robust data management practices and strong privacy protections (PC 2017; The Economist 2020; Li and Yarime 2021).

Part of the comfort with the shift towards the use of more timely indicators to inform public policy may also be a result of changing public expectations. As the global economy becomes more data driven, people are increasingly expecting more tailored, timely, and responsive services in other aspects of their lives.

Data and government decision making

The main channel through which data generates economic value is by informing decision making. Data enables individuals to make better decisions about products to buy, investments to make, or actions to take. It enables businesses to design new, targeted products, and to invest and produce more efficiently.

Similarly, data is crucial in helping policymakers design more effective and targeted policies. Althaus, Bridgman and Davis (2013) provide a model of the policy-making cycle in Australia made up of eight separate steps. Data can play a crucial role in many of these steps, including:

- effectively identifying issues amenable to policy responses
- analysing and designing policy instruments to ensure that they are fit for purpose and to evaluate the cost of the policy
- informing the consultation and coordination process, helping to make a case for the reform
- evaluating the effects of the policy, whether it worked or needs to be adjusted.

Improving the underlying data that informs evidence-based policy improves the efficiency and effectiveness of government decision making. Arming policymakers with higher frequency, more granular data in close to real time can allow for faster, more responsive, more targeted policymaking.

3. A DATA-DRIVEN RESPONSE TO COVID-19

COVID-19 has presented a unique policy challenge

COVID-19 presented a unique set of policy challenges requiring rapid diagnosis and responses. Even more so than usual, there was a need for timely, high frequency, and granular data to help design policy and monitor its effectiveness, as well as track economic conditions. In particular:

- A key overriding goal of the imposition of activity restrictions was to minimise mobility to stop the spread of the virus. Timely, high-frequency data on mobility and economic activity was invaluable in monitoring the effectiveness of the lockdowns in containing the spread of the virus, as well as the economic impact of these restrictions, and how quickly activity bounced back.
- The impacts of the pandemic and the restriction-induced lockdown were highly heterogenous depending on location, occupation, and ability to work from home, as well as demographic factors such as age and family structure. As such, policymakers required data that were sufficiently granular to draw out this heterogeneity and adequately identify the policy issue.
- The sharpness of the decline in economic activity, and therefore the speed of the required policy response, engendered a need to monitor economic outcomes and the effects of policy in close to real time, which was not possible with many traditional economic indicators.

Timely data provided invaluable insights during the initial shock

Fiscal policy responses to crises can be subject to considerable lags, including recognition, implementation, and transmission (Henry 2021). To reduce the recognition lag associated with the delayed release of official economic statistics, it has become more common for policymakers to turn to other sources of data during a crisis. This was seen during the Global Financial Crisis (2007–2008), when developments in financial markets were a critical indicator that Australia was at risk of entering a recession. The Australian Government responded quickly to the threat of recession in developing its fiscal stimulus package and paid close attention to indicators such as monthly retail sales and business and consumer confidence to monitor the recovery (Gruen 2009; Barrett 2011). Private sector engagement was also a crucial source of intelligence for daily briefings (Tune and Edwards 2021).

The growth of timely, high-frequency datasets in the following decade meant COVID-19 could be monitored in near real time. In the early stages of the pandemic, mobility data from Apple and Google as well as spending data from some of the commercial banks were crucial tools for monitoring activity on a daily or weekly basis, while accounting software data provided timely insights into business health (Table 1). Other administrative data sources such as personal and business insolvencies also proved valuable in monitoring the early impacts of restrictions and high-frequency data on imports were used to monitor potential disruptions to the supply of key imports and goods, including health-related goods. In addition, the ABS leveraged many of these new data sources to increase the speed of its reporting, including introducing new preliminary releases and surveys such as Provisional Overseas Travel Statistics, Preliminary Retail Sales, Preliminary International Merchandise Trade, Household Impacts of COVID-19, and Business Conditions and Sentiments (initially called Business Impacts of COVID-19).

Workers and businesses were hit particularly hard by activity restrictions, especially in services industries. Understanding and measuring the shock to the labour market was made more challenging than usual because many workers had been stood down temporarily or were working reduced hours (in part because of the introduction of JobKeeper). As a result, the unemployment rate was a less informative measure of labour market health than usual and other indicators such as hours worked gained more prominence. The timeliness and broad coverage of Single Touch Payroll (STP) made it one of the most valuable datasets in assessing the health of the labour market in real time both for Treasury and the ABS (through its Weekly Payrolls release) and in modelling fiscal policy response options.

These timely data sources allowed Treasury to provide regular briefings on a range of crucial economic indicators to senior officials and ministers during the early stages of the pandemic. An important part of these briefings was reconciling noisy or conflicting data and managing revisions as data were updated. Real-time private sector and STP data were also crucial in the analysis that informed the Government's evidence-based, targeted, and timely response to the crisis that helped people and businesses through the period of restrictions and prevented medium-term economic scarring.

Large administrative and survey datasets provided greater illumination

As the effects of lockdowns subsided and the economy began to recover, integrated administrative and survey datasets played a crucial role in designing responses, evaluating policy outcomes, and identifying households, businesses or regions that would benefit from further support. These datasets were also used to provide an early read on the potential longer-term effects of the pandemic. Three datasets were particularly useful:

- **Single Touch Payroll (STP):** STP is an administrative dataset of payroll information, covering most businesses and employees in Australia. The timeliness and broad coverage of STP made it valuable in assessing the health of the labour market in close to real time. Another key benefit of STP was the ability to integrate it with other administrative data, such as JobKeeper, allowing Treasury to monitor the effectiveness of the program and informing its subsequent phases. For example, these data were crucial in modelling and then monitoring employment outcomes following the end of each phase of JobKeeper. These data were used to demonstrate the effectiveness of JobKeeper in supporting jobs and viable businesses, as well as the potential distortions the policy could engender over time (Andrews, Bahar and Hambur 2021). They also supported decisions around the winding-down of the program. In addition, STP data facilitated analysis of localised labour shortages and the role of migrant workers in the labour market, helping to inform border policies.

- **Labour Market Tracker (LMT):** The LMT is a new integrated administrative dataset that Treasury helped develop. During the COVID-19 pandemic, it was used to provide deeper insights into flows between employment and support payments and facilitated a more holistic view of

changes in people's incomes across the distribution. For example, as discussed in JobKeeper Insights (Department of Treasury 2020, 2021), these data showed that employment and welfare payment income for the bottom quintile of working age people increased by 20–25 per cent in the final three quarters of 2020, compared to the March quarter. This suggested that financial distress was likely to be more limited than previously thought, and that consumers had additional savings that could help support the economic recovery. The data were also valuable in monitoring the recovery in employment for those on Coronavirus Disaster Payments at the end of the Delta-related lockdown, supporting decisions around its wind-down.

- **Longitudinal Labour Force Survey (LLFS):** Access to the worker-level data underpinning the ABS Labour Force Survey meant that Treasury was able to better understand how this unique labour market shock was playing out, and which groups were particularly impacted. While slightly more lagged than STP and the LMT, and based on survey rather than administrative data, the LLFS provided a crucial longer-term view that allowed for comparison of current detailed outcomes to previous economic shocks. It also provided a wealth of other valuable labour market indicators, including more detailed information on the demographic characteristics of workers, experiences of unemployment and participation choices. This was crucial in identifying cohorts at risk of labour market scarring, and therefore designing appropriate support policies.

Table 1: Examples of new data sources used by Treasury to respond to COVID-19

Name	Description	Frequency	Lag	Coverage	Examples of Treasury use
Public sector data					
Single Touch Payroll (STP)	Administrative dataset of employee payroll information	Fortnightly	4–6 weeks	Most businesses and employees	Monitor labour market outcomes; estimate business exits in real time
Labour Market Tracker (LMT)	Integrated administrative dataset including STP, welfare payments and demographics	Fortnightly	3–4 weeks	Most businesses and employees, all income support recipients	Analyse interactions between different policies and transitions between employment/welfare
ABS Longitudinal Labour Force Survey (LLFS)	Unit record data underlying the Labour Force Survey	Monthly	6 weeks	Representative, rotating sample of 50,000 people	Cohort impact analysis; labour market dynamism and resilience
Business Activity Statements (BAS)	Business turnover reporting	Monthly, quarterly, yearly	Varies (around 2 months)	Most businesses	Monitor business health and the effects of policies
Business Income Tax (BIT)	Business income and tax data	Yearly	2 years	Most businesses	Link pre-pandemic outcomes with more timely data
Private sector data					
Mobility (e.g. Google, Apple)	Anonymised location data from users of Google and Apple devices	Daily	2–4 days	Australian states, major cities	Monitor mobility as a proxy for economic activity
Bank card spending	Micro-aggregated card spending from some retail banks	Daily	2 days	All customers	Monitor changes in consumer spending in response to lockdowns
Accounting software (e.g. MYOB, Xero)	Reports on business performance	Varies	Varies	All customers	Monitor business health; analyse the impact of policies

Understanding the value of different datasets

Real-time private sector data and larger administrative or survey datasets can provide significant insights to policymakers. But in isolation each source can only shed light on a small patch of ground. Deep understanding of what each dataset can tell us, as well as the economic fundamentals, is needed to know which dataset best adds value for which policy problem, how to reconcile conflicting evidence, and how to use multiple datasets to build a more complete picture of the economy. Having access to many different sources of data helped Treasury and the broader APS be flexible and responsive to a rapidly evolving situation. Crucial to Treasury's ability to harness the power of these data was its ability to understand the advantages and limitations of different datasets, a product of its prior investment in capability.

Microaggregates reported by the private sector, such as mobility data, bank spending data or business performance indicators from accounting software, provided a very timely read on economic activity. With conditions evolving rapidly, these data were vital for monitoring economic outcomes and assessing the immediate effects of policy – both in the public sector and private sector (such as Andrews, Charlton and Moore (2021)). However, use of the data was complicated by their newness, which meant limited institutional knowledge of the data and a lack of historical time series information to compare current outcomes to. Sample representativeness was also an issue, given these microaggregates were derived from the data provider's customer base and not necessarily reflective of the population. Further, commercial sensitivities limited the level of disaggregation at which Treasury could receive some data, which restricted avenues for bespoke analysis.

Public sector data sources tend to be less timely but more reliable and representative of the population. Administrative data are particularly valuable because, subject to access and privacy controls, greater access to unit-record data on individuals and firms is possible. With the right combination of skills and technology, administrative data can be used to conduct bespoke analysis on issues as they arise. This was particularly helpful in modelling policy options and evaluating outcomes during the COVID-19 crisis, given the high level of heterogeneity of the health and economic impacts. The JobKeeper Review is a demonstration of this, where an in-depth evaluation was able to be conducted by Treasury quite quickly after the JobKeeper program had wound down, and much earlier than standard data sources would have allowed (Department of the Treasury 2020, 2021).

However, making use of large and novel datasets requires investment in specialist data analytics skills and the computer systems ahead of time. It was only because Treasury had made this investment before the COVID-19 crisis that it was able to unlock insights from datasets such as STP and the LMT. Treasury had also built strong relationships with the ABS and private sector data providers prior to the COVID-19 crisis and was able to leverage these relationships to acquire new datasets quickly.

There were also legal barriers to the use of some of this high value data, in particular data held by the Australian Taxation Office (ATO) on STP data and Business Activity Statement reporting. The Australian Government moved quickly to pass the *Coronavirus Economic Response Package Omnibus (Measures No. 2) Act 2020*, which temporarily amended the *Taxation Administration Act 1953* (Cth) (TAA) to allow Treasury to use de-identified tax data for policy development and analysis in relation to COVID-19, including any programs introduced as a response to COVID-19. The amendment to the TAA expires on 30 June 2023.

Treasury's access to a wide range of data sources, combined with pre-COVID investment in capability, enabled it to triangulate and integrate different datasets to draw insights that a single dataset alone would not provide. This occurred through informal means, such as simple mappings of new data to official statistics, and more formal means, such as the integration of STP and welfare payments through the LMT. Collaboration was also essential to extract the signal from the noise, and Treasury was able to

lean heavily on its relationships with the ABS, other agencies, and private sector data providers to quickly build an evidence base for policymaking.

As we move towards COVID normal, new and sometimes unanticipated problems will continue to present themselves. But Treasury is well-placed to respond to these challenges. The availability of new tools, datasets, and capability should help shed more light on policy solutions than was previously possible and provides a strong foundation for the future.

4. WHERE TO FROM HERE?

This paper has discussed how Treasury and the APS more generally moved rapidly to make use of new data sources to inform the response to the pandemic. The scale and speed of data sharing that was possible during COVID-19, and the number of new timely, high-frequency and granular datasets available and in use now represents a step change in Australia's data landscape, as well as across the world. Combining the insights provided by integrated datasets with high-frequency information about economic activity allowed Treasury and the Government to respond to the policy challenges of the last two years more quickly and armed with more knowledge than had previously been possible. It has been said that a crisis is like a receding tide – it reveals the rocks that were there all along (Reeves et al 2020). As the tide of COVID-19 restrictions recedes, and Australia moves to COVID normal, it is worth examining what ongoing benefits these new datasets can have as foundations of Australia's agility and innovation.

There are already early signs that the novel datasets made available over the past two years will have significant ongoing benefits for Australia. Cutting-edge datasets are being opened more widely to Government and researchers through the ABS DataLab, including the LMT and the microdata underlying Wage Price Index and the Survey of New Capital Expenditure. The breadth of policy-relevant questions that these various datasets could answer demonstrates their ongoing value.

An important part of this is to continue to build data maturity. While COVID-19 significantly lifted Australia's public sector data maturity, further transformation is required to fully realise the benefits of data. This transformation is being actively managed through the Australian Data Strategy, which outlines the Australian Government's five-year vision for data. It focuses on maximising the use of data, trust and protection, and enabling data use. The Australian Data Strategy, underpinned by an Action Plan, sets out clear actions to improve how the Government uses data to better the lives of all Australians, to help businesses and others to be more productive through data use, and give Australians greater agency over how their data are used.

There are three key lessons Treasury learned during COVID-19, which can be taken forward to enable Treasury and the APS to build on the strong foundations established through COVID-19.

Lesson 1: Continuing to look outwards

COVID-19 resulted in significant collaboration across jurisdictions and sectors to respond to an unprecedented crisis. This collaboration yielded enormous benefits, including providing a near real-time view of what was happening in the economy through access to timely, high-frequency datasets held by the private sector. As McKinsey has noted:

> *Australia's COVID-19 response has been characterised by effective actions, policies, and leadership practices—implemented through strong collaboration between the public and private sectors—that are transferable and repeatable elsewhere (Child et al 2020).*

Treasury was uniquely well placed as a trusted economic adviser to partner with the private sector to leverage new sources of data during COVID-19. Establishing these partnerships requires understanding where the public and private sectors have similar or complementary objectives; private sector data can inform policy decisions that affect the private sector, and the public sector can learn from advanced analytics more commonly used in the private sector (such as machine learning techniques). Continuing to build trust with the private sector and the community through transparency, meaningful collaboration and reciprocal relationships will continue to strengthen these outcomes.

Consultative bodies and partnerships also played a significant role in embedding collaboration and reciprocity. For example, the Australian Government established the National COVID-19 Coordination Commission to create a structured, open mechanism for collaboration between the public and private sectors. Making collaboration part of business-as-usual is a lesson we can take forward into a COVID-normal world.

The Australian Data Strategy recognises and embeds the importance of collaborative partnerships between the public and private sectors, and the significant mutual benefits this can provide (Australian Government 2021). The Australian Data Strategy also recognises the importance of looking outwards internationally. International data flows are the backbone of today's diversified value and supply chains and have been crucial in responding to the COVID-19 pandemic.

In addition, it will continue to be important to take a risk-based approach to managing the sensitivities of different data. A barrier to effective use of big data is public trust and privacy concerns. Non-sensitive data can be made open by default (such as aggregated mobility data from Google, and Apple, as well as non-sensitive data made open under the Australian Government's open data policy). However, where private sector datasets are more sensitive, data sharing partnerships with the private sector will need to be more structured given the sensitivity and commercial value of many datasets. Securing public trust will become increasingly important as we move away from crisis-driven data sharing and use, towards COVID normal.

The Australian Government, through the Australian Data Strategy, is committed to applying a best practice approach to data sharing arrangements and breaking down barriers to collaboration, and the Office of the National Data Commissioner is currently developing best practice data sharing agreements for within the Australia public sector. These could be used as a starting point for considering data sharing agreements with the private sector.

Robust privacy and security controls will also be needed to manage commercial-in-confidence considerations. The Australian Data Strategy embeds a risk-based approach to public sector data sharing through the 'Five Safes' model, which provides a useful starting framework for considering a risk-based approach to data sharing with private sector data, although additional considerations such as commercial-in-confidence apply in private sector settings. There is a need to be flexible and pragmatic in design and delivery of data sharing projects with the private sector, while still applying robust risk management processes, to enable fit for purpose data sharing arrangements.

Lesson 2: Investing in capability

COVID-19 has shown that prior investment in data and capability are crucial in being able to leverage the value of data in policymaking. The development of analytical capability and datasets does not happen overnight. Investment by Treasury and the APS in data, economic modelling, microeconometrics and analytical capability (in part facilitated by programs such as the Data Integration Partnership for Australia) paid off during COVID-19, enabling Treasury to move quickly to produce high-quality analysis with complex, novel datasets.

For example, without prior investment in digitisation of reporting to the ATO the crucial STP dataset would not have been available. Equally, without prior investment in capabilities, Treasury might not have had the correct mix of skills and systems to facilitate this analysis. Governments need to continue to invest in the right capabilities to navigate and use data for more strategic and timely decisions, and not drown in the data deluge (Kaiser and Carneiro Peixoto 2020).

The Australian Data Strategy outlines a vision to invest in enhanced data maturity, skills and capability in the APS. The Australian Government has already begun this investment by establishing the APS Data Professional Stream in 2020 in response to findings from the 2019 APS Review. The Australian Data Strategy notes that:

> *… this stream is part of a larger push to enact cultural change and move towards a data driven APS, one that can take advantage of the latest tools in data and analytics (Australian Government 2021, p 54).*

Investment in infrastructure, including data assets, infrastructure, and organisational maturity is vital. The Australian Data Strategy prioritises uplifting data maturity in the APS. It also outlines a vision to make more publicly held data available, develop the infrastructure needed to enable better use of government data, underpinning new data assets using data shared between the Australian and state and territory governments, and drive better sharing of and certainty around data.

Lesson 3: Removing barriers that prevent agility

COVID-19 brought into focus the importance of the APS being agile, responsive, and innovative. Regulation shouldn't needlessly hinder innovation. The *Coronavirus Economic Response Package Omnibus (Measures No. 2) Act 2020* was an example of Government moving quickly to facilitate critical data sharing.

Several initiatives are underway to further streamline regulatory and administrative barriers. The Australian Data Strategy recognises the importance of breaking down unnecessary barriers and simplifying data sharing, enabling governments and non-government organisations to get more value out of Australian Government datasets through guidance with a best practice approach to data sharing arrangements and working to standardise documentation.

The Data Availability and Transparency (DAT) Bill that is currently before Parliament will help maximise the value of our public sector data, support our modern, data-based society, drive innovation, and stimulate economic growth. This new legislative framework was recommended by the Productivity Commission to help overcome barriers that prevent efficient use of public sector data, while maintaining strong privacy and security provisions.

The DAT Bill is an important step forward, but there are other significant pieces of legislation governing Australia's data landscape that may need to be re-examined to ensure they are fit for purpose in this dynamic environment, such as the *Census and Statistics Act 1905* (Cth) which governs the operation of the Australian Bureau of Statistics. Navigating state and territory data sharing poses additional challenges.

However, creating the right culture to facilitate agility, collaboration and good outcomes is perhaps as important as having the right regulations in place. COVID-19 showed how large the gains can be from creating a culture of trust and innovation, where curiosity is encouraged and rewarded, and collaboration is valued. This culture can be built internally, within each department, and externally, as we look outwards, and create a culture of collaboration and ideas generation.

PC (2017) emphasised the importance of trust to facilitate data sharing, which is embedded as a core pillar in the Australian Data Strategy. This is being implemented by the work of the Office of the National Data Commissioner through the trust frameworks implemented under the Data Availability and Transparency Scheme.

5. CONCLUSION

COVID-19 provided an unprecedented challenge for Treasury and the APS, as it did for governments around the world. The Australian Government, and the APS, delivered a world-leading response to COVID-19, making Australia one of the best performing countries in economic and health outcomes.

This world-leading response was enabled by investing in new sources of high frequency data, as well as significant innovation, collaboration, and agility by the APS.

Treasury's experience has demonstrated that investing in data capability and infrastructure has significant benefits, as shown by Australia's data-driven response to COVID-19. Continuing to utilise these new sources of data to address emerging policy challenges will assist Government in more effective, efficient, timely and responsive policymaking into the future.

The Australian Data Strategy is managing this public sector data transformation, to help move Australia from being in some senses a laggard in terms of its data maturity, to being a world leader in terms of the breadth and quality of data available for analysis. This will have significant flow on benefits, such as to facilitate and attract world-leading research into Australian-specific policy questions, which in turn will improve the evidence base for policy and the policy discourse in Australia.

Treasury and the APS can take the lessons learned from COVID-19 – continuing to look outwards, investing in data capability and infrastructure, and removing barriers to agility – and continue to implement them as we move to COVID normal. Building on these gains and maintaining momentum will help ensure the APS remains well placed to meet the next challenge.

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