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Dear Alex

## Data Availability and Use: Issues Paper

The Actuaries Institute is pleased to contribute to the Commission's inquiry into the benefits and costs of increasing the availability of public and private sector data. The subject is particularly germane to the core work of actuaries and their professional skills in the collection and analysis of data. Historically, the actuarial profession is also steeped in the imperative to protect confidential commercial and personal data.

By way of background the Actuaries Institute submission to the Financial System Inquiry (FSI) called for enhanced access to public data. Our submission pointed to a number of broader economic advantages that could be fostered by expanding access to data including:

- ▶ **Increased competition** - frictionless information underpins fully competitive markets. This benefit pre-supposes maintaining protection of privacy and intellectual property rights.
- ▶ **Market efficiency** - more information on insurance and financial risk allows cover to be more finely priced, allowing companies to compete on an equal footing and for more extensive coverage.
- ▶ **Risk Management** - more accurate information about the nature and uncertainty of risks allows for a better understanding of the total risk environment, more finely-tuned risk signalling, more comprehensive risk assessment and management, better regulation and more appropriate and efficient determination and allocation of capital.
- ▶ **Innovation** - the G8 described the opportunities for open data, as follows:

*"Freely-available government data can be used in innovative ways to create useful tools and products that help people navigate modern life more easily. Used in this way, open data are a catalyst for innovation in the private sector, supporting the creation of new markets, businesses, and jobs. Beyond government, these benefits can multiply as more businesses adopt open data practices modelled by government and share their own data with the public."*

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- ▶ **Testing Policy Efficacy** - policy effectiveness is ultimately tested on evidence. Evidence accumulates in data. Moreover, policy can operate across portfolio responsibilities and is often interdependent. Where data is uncollected or partial, policy impacts can only be hypothesised or approximated. In such cases policy may be poorly understood (effects under- or over-estimated) or be ineffective or even redundant. Improving access to data can provide the necessary feedback loops to fine-tune policy, faster.
- ▶ **Improving the quality of policy debate** - relevant government data and modelling should also be made available to the private sector to foster constructive policy debate.
- ▶ **Data protection** – privacy of personal data is a paramount concern, however, privacy risks associated with data sharing are understood by both private and public sectors and protection principles and regimes are being continually improved.

We understand the need to preserve anonymity of personal records and the protection of commercially confidential information. However, better data leads to informed decisions which are more effective. Where government data is sensitive, there should be the opportunity for restricted access for research purposes.

The attached appendix includes a number of examples of public and private data sets that that could be usefully accessed to drive improved efficiency and enhanced consumer outcomes. The Institute would be available to discuss aspects of these examples if the Commission wishes to clarify any aspects of this paper.

Yours sincerely

(Signature removed)

Lindsay Smartt  
President, Actuaries Institute



## Public Sector Data

Actuaries are particularly involved in insurance, superannuation and investment issues that are concerned with people's financial security. They have been collecting common mortality and disability data for over a century, to facilitate accurate pricing and valuation of the liabilities of insurance companies. These data were privately collected and then shared among participating insurers, and could provide a model for the collection and usage of data for the common good.

The collating of private data is increasingly the province of government bodies such as the ABS, APRA, ATO and the Department of Human Services (principally through Centrelink and Medicare). There would be considerable advantage to the public if many of these data sets were made appropriately available to the public, to better inform their choices. Enhanced access would also assist entrepreneurs develop products and services that meet people's financial needs and wellbeing.

The Institute believes expanded access to public sector data, with proper privacy protections, provides the most significant opportunity to improve market efficiency. While currently available statistics provide insights into particular financial sector activities, it is far more difficult to obtain a system-wide, sector or market view of emerging risk dynamics and behaviours. This information is important and could help formulate the most effective policies for managing future macro risks to the financial system. Some examples are provided below.

- Given the impact of changing demographics on the size of retirement savings pools, the effects on investment funds in the post-accumulation phase and rising future health costs it is important for market efficiency that the private sector has access to relevant data so that it can develop the products that will assist consumers best manage their evolving retirement needs. For example, understanding the modelling that underpins Treasury's *Intergenerational Reports* would enable the retirement income sector to better comprehend and manage the risks that have shaped Government policy, in this area.
- Identifying the extent to which Australian retirees spend down their assets; this is critical information for superannuation funds developing advice and financial products for retirees. Members of the Institute have been actively collecting data from superannuation funds and analysing ATO and Centrelink data sets to investigate the extent to which retirees are particularly frugal – or not. Initial results suggest that some 20% of retirees over 75 are spending too much and will run out if they live longer than expected. It could be intentional and a natural step as their needs decline. On the other hand, they may have lost money due to dementia, financial abuse of some kind, or their own poor decision making. The Department of Social Services has this data, but the latest publicly available information is a decade old.
- Age related salary scale data for defined benefit pension funds; salary data related to age, gender and education (and other demographic variables) is of critical interest to individuals wanting to make financial plans. This information is held by the ATO and should be made widely available.



- The above data should also be linked to health status and expenditure. This requires a link to Medicare, the NDIS, private health insurance and (particularly aged) care providers. Such information is critical to the optimization of health care expenditure and the design of Medicare and private health insurance schemes. It would also be invaluable for financial planning in older age particularly. Our preliminary hypothesis (based on totally inadequate data) is that older Australians live in (unnecessary) fear of having to pay significant health and care bills that will not eventuate.
- Increasing availability of public sector data should also entice market entry by private sector data aggregators and analytical firms with greater propensity to innovate which may accelerate knowledge dissemination.
- Regulators such as APRA and ASIC collect significant volumes of data from financial and other institutions. There are often significant costs associated with the collection and collation of that data but once consolidated the marginal cost of sharing the data is comparatively small. That consolidated data could allow for better risk signalling leading to improved market efficiency, finer pricing and greater innovation.

The following examples indicate the type of public data that could be usefully accessed to drive improved efficiency and enhanced consumer outcomes:

- Treasury's modelling for the Intergenerational Report
- ATO financial planning calculator, superannuation, income, investment and property data
- APRA – release of superannuation/ insurance information
- Health data sets including:
  - All Medicare claims. This would assist all providers and funders of health services to focus on preventative care.
  - All PBS claims. Similar to above, this may allow early intervention in some cases.
  - Public hospital data sets. This will increase benchmarking of private and public hospitals, and should improve national best practice.
- Centrelink data sets on welfare payments
- State/territory data sets on health, education, justice, child protection, disability and other human and community services.
- The greatest value of all of these data sets is when they are linked across individuals (and ideally families and communities), across sectors and jurisdictions in an appropriately secured way. This enables a truly person-centred holistic understanding of people's needs and service usage in a way that should enhance the provision of many human services, whether by government or NGOs. The actuarial investment approach, as it is being implemented in Australia and even more so in New Zealand, requires this linked longitudinal data to best provide the evidence governments need to provide better targeted services aimed at achieving most impact on people's lifetime wellbeing.



- There are major challenges to achieving this, which the Commission is rightly highlighting. But the creation of the New Zealand Integrated Data Infrastructure<sup>1</sup> has provided a model for how this can be done in reality. A number of projects in Australia, such as ABS's Multi-agency Data Integration Project (MADIP), the Public Sector Data Management project and Department of Social Services National Centre for Longitudinal Data show that there is an appetite to resolve barriers to improved data usage and steps being taken to do so. There are also good examples of data linkage projects in Australia, such as the AIHW's Pathways in Aged Care data set or the work of SA-NT DataLink, but the relatively low re-use of these datasets is indicative of some of the barriers that potential users face.
- Researchers more broadly will also be far more productive if they have access to data of this type rather than relying on small, expensive cross-sectional surveys.

### Private Sector Data

Allowing access to private sector data poses additional difficulties and there is a natural friction between the benefits of innovation and competition and the need to preserve intellectual property and compensation to those that collect and store data.

It should be recognised that the private sector collects data for commercial value and will only collect new data where the estimated value exceeds the cost of collecting, storing and analysing the data. That equation would be fundamentally altered if the perceived commercial value to the private entity is eroded by forced sharing.

Nevertheless, it is acknowledged that the commercial value of privately collected data can spur innovation and economic growth. The Productivity Commission may wish to consider the development of a framework that assesses the balance between public good and commercial advantage that may flow from sharing private data.

For example, the Commission could recommend the establishment of a Review Committee (including private sector representatives) that would consider the release of appropriate consolidated private sector data, bearing in mind; competition, IP compensation, innovation merits, consumer benefits and privacy issues.

- Data sources which would be subject to the consideration of the Review Committee, include:
  - Data from GPs, specialists and private hospitals could be merged into public health data to help improve services, lower costs and assist preventative care, notwithstanding the need for stringent privacy safeguards.
  - Telematics databases: Continuous and immediate motor vehicle information including location, driver behaviour and engine information give insights into driver behaviour, road traffic incidents and congestion etc.
  - Data from Connected Homes / Internet of Things – having access to real time data can help for example fire fighters understand the risks and causes of house fires, with

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<sup>1</sup> [http://www.stats.govt.nz/browse\\_for\\_stats/snapshots-of-nz/integrated-data-infrastructure.aspx](http://www.stats.govt.nz/browse_for_stats/snapshots-of-nz/integrated-data-infrastructure.aspx) and [http://www.stats.govt.nz/browse\\_for\\_stats/snapshots-of-nz/integrated-data-infrastructure/idi-datasets.aspx](http://www.stats.govt.nz/browse_for_stats/snapshots-of-nz/integrated-data-infrastructure/idi-datasets.aspx)



the possibility of the fire department being able to intervene early through real time access to that

- Data on flood plains and other natural disaster risk levels so that potential home buyers can make informed decisions on where to purchase, how much to pay, and whether obtaining home insurance may become an issue.
- Benefits to insurers and customers of increased access to data include:
  - More accurate pricing and less uncertainty about outcomes, therefore requiring less capital to mitigate risk and a lower cost of capital to incorporate into pricing – overall a lower cost of insurance across the group within the pool.
  - Most importantly, information on risks that can be used to assist in managing risks proactively and ideally reducing the level of risk where there are controllable factors that action can be taken on.

## Personal Data

The actuarial profession is active in the fields of 'Big Data', health insurance, life insurance and banking and is aware of the sensitivity around the collection, storage, security and ownership of personal data. Consumers are naturally guarded about the confidentiality of their health records, medical test results (e.g. genetic tests), credit ratings and purchasing decisions.

However, there are personal data sets which are of high value to consumers, insurers and society:

- Lifestyle data sources and the analysis done by insurers, e.g. 'wearable' applications like Fitbit, enable customers to monitor and share their lifestyle data such as weight, body measurements, heart rate, blood glucose and blood pressure levels, location, length and speed of exercise and other activity. This potentially has health as well as financial benefits for the consumer and may constrain public health costs.
- Telematics that record personalised driving data can reduce insurance premiums for good drivers and encourage better driving behaviour to reduce the risk of accident, damage and death.

## Data quality

Given that a key task of actuaries is analysing both private and public sector, we make the point that the quality is overwhelmingly poor. Data quality can be affected by entities employing false economies when subjected to budget pressures. In the longer run, this is an expensive approach as consequential data cleaning absorbs considerable time and all analysis has to be treated with suspicion.

One potential disadvantage of increasing the availability of public and private sector data is that users of the data may place a disproportionately high level of reliance on poor quality data, thereby resulting in poor decisions. An indication of data quality should be released with the data itself alongside information on how the data was collected and what data quality checks were performed, if any. A possible solution is to empower the audit profession to assess and report on data quality in both the private and public sectors.



## Data volumes

A key advantage of enhanced availability and access to large data sets, principally administrative data sets, is the volume of data and coverage of the populations concerned. The disadvantage tends to be in the depth of detail and richness of the data compared to specific research/survey data sets and in the care that needs to be taken when analysing data collected for one purpose in the context of another purpose. However, the volume provides a high degree of robustness at relatively lower cost compared to expensive and complex survey data collection. The two types of data are complementary and should be used in conjunction with each other.

## Privacy

Privacy protection is a crucial element of data analysis. The actuarial profession is well aware of the regulatory requirements and ethical principles in relation to privacy. Nevertheless, we propose that the Commission consider the following safeguards to underpin any enhanced access to public and private sector data sets.

- Consideration should be given to dealing with certain parties who attempt to purposefully re-identify de-identified data.
- Where necessary, data can be stripped of any personally identifiable information, and only the aggregate level trends are shared.
- Guidelines and limits on the types of data collected is one way of increasing the level of confidence in consumer privacy.
- Clearly explaining the value that will be derived from sharing data and transparency around how the data will be used and who it will be shared with are other ways of increasing individuals' comfort in sharing data.
- A model that Australia might like to consider for productively expanding the discussion on these key issues is the New Zealand Data Futures Partnership which has been created to help lead the development of a data-use system that will create value for all New Zealanders by making better use of their data.
- Open and transparent consultation with the Australian people about the value to them, individually and as part of a community, of increased use of data as well as about the risks and the safeguards to put in place to manage those, will be key to achieving the social licence for increased data availability and use. Part of that conversation should be to highlight the nature of current data sharing by consumers with commercial providers and draw comparisons of the benefits and risks of similar sharing in other domains.