Te Kāwanatanga o Aotearoa
New Zealand Government

Data Investment Plan

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New Zealand Government

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Why do we need a Data Investment Plan?

Data has the ability to improve the lives of New Zealanders today and for generations to come. It is increasingly shaping our daily lives, our decisions, and our interactions. It is paramount for New Zealanders to have access to information they can trust.

The government holds and uses a vast amount of data on behalf of New Zealanders. This is an enduring asset that needs to be carefully curated. However, we cannot stand still; we must look to the future and identify the data needs of tomorrow.

The purpose of this Data Investment Plan (the Plan) is to support government agencies to maximise the value of our current data assets, help Ministers invest strategically and sustainably to meet future needs, and to assist Iwi and Māori to work with the Crown to establish priorities for data investment to meet Te Tiriti responsibilities.

What are the strengths and weaknesses of New Zealand's data system?

New Zealand's government data system has many strengths. These include robust statistical design, data standards, reliable detailed economic datasets, and innovative national wellbeing and social insight measures.

New Zealand is also considered a world leader in its use and integration of administrative data, and in the development and implementation of frameworks that engender trust in how data is used (e.g. Ngā Tikanga Paihere and Five Safes Frameworks, the Algorithm Charter for Aotearoa New Zealand, and the Data Protection and Use Policy).

While we should celebrate these strengths and continue to lead in these areas, we must also acknowledge there are frailties and key gaps in the government's data systems. This limits the data system's ability to support government, community and individual decision making, as well as our ability to measure the outcomes that we are trying to achieve.

A major cause of our data limitations is that our investment in data can be piecemeal, uncoordinated, and tactical rather than cohesive and strategic. This leads to:

- inconsistent, duplicate and patchy data especially in relation to Iwi and Māori data needs
- critical gaps where no single programme has been able to make a case for investment
- delayed investments despite it sometimes taking 10 years to build a useful data set
- technological deficits, which impact the interoperability, accuracy and reliability of the data system and reinforce the need for legacy systems, and;
- difficulty in maintaining and improving practice in areas such as data security and data infrastructure.

How will the Plan support a better data system?

This is the first phase in a multi-year programme that will explore our data assets, the infrastructure that surrounds them, and the capabilities required to unleash them.

The project has:

- helped government agencies, both individually and collectively, to understand their data assets and how they are used, and;
- sought Iwi-Māori input into the representation and presentation of Māori in government data and how data can be used to support the realisation of Iwi-Māori aspirations.

The Plan provides the government with a comprehensive view of data asset investment opportunities. This supports a more strategic, coordinated and systematic approach to data investment by:

- helping agencies make better (baseline-funding) investment decisions relating to their existing assets
- helping agencies identify opportunities for improvement and to develop collaborative joint Budget bids, and;
- supporting Ministers and system leads (e.g. the Treasury, the Government Chief Data Steward and the Government Chief Digital Officer) better understand the data asset investment environment.

How does the plan link to the Government Data Strategy and Roadmap 2021?

The *Government Data Strategy and Roadmap 2021* (the Strategy) published in September 2021[1] provides a shared direction and plan for Aotearoa New Zealand's government data system, offering a flexible foundation for agencies to work together and align their data initiatives.

The Strategy seeks an inclusive and integrated data system and has five objectives:

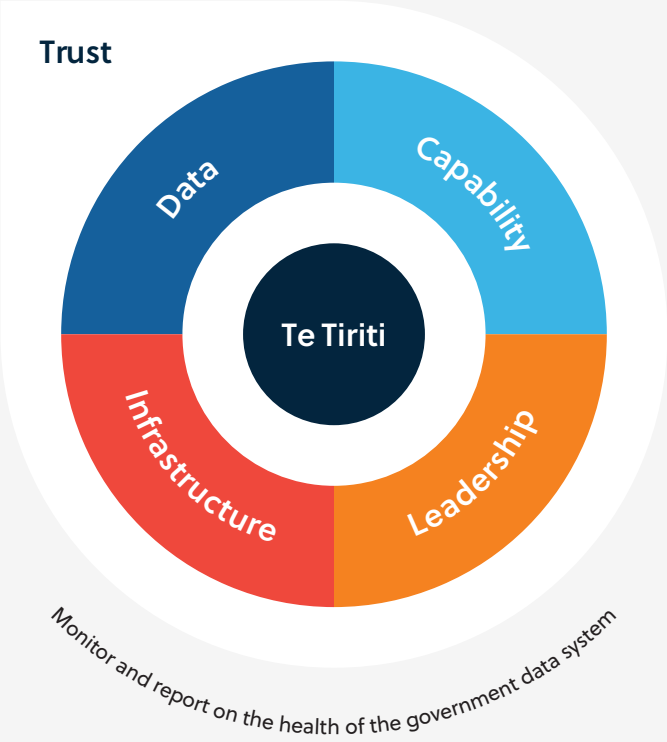
- People trust the data they share with government will be collected, managed, and used safely and responsibly.
- Māori and Iwi have the data systems they need to fulfil their aspirations.
- People and organisations have access to efficient, effective government services.
- Government decisions are informed by the right data at the right time.
- Government is held to account through a robust and transparent data system.

It is built around four focus areas: data, capability, leadership, and infrastructure and underpinned by a responsibility to uphold Te Tiriti and a commitment to maintain and enhance Public Trust and Confidence.

The Plan is a companion document to the Strategy and should be read alongside it.

The creation of the Plan is a key project to action within year one of the Strategy's data focus area.

[1] https://data.govt.nz/assets/Uploads/4e-government-data-strategy-and-roadmap.pdf



How are our data assets performing?

A multi-agency team performed a stocktake during which they assessed approximately 800 actual and potential data assets under 64 groupings. Detail on the stocktake process is provided in Appendix Two.

The stocktake identified 20 data asset groups (31 percent) spanning the society, environment and economy pillars were in need of major development. Economic assets were found to be the best performing and environmental assets requiring the most investment.

The stocktake also identified 12 cross-cutting populations of interest (half of which require major development) and six data asset groups that support Māori data needs and aspirations[2] (one third need major development).

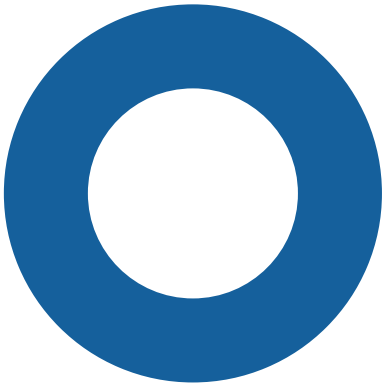
Finally, although assessment of data infrastructure and capability will be considered in future, the stocktake also assessed the data integration assets that are critical to realising the benefits of these data assets. Half of the four groupings needed major development.

What assets were in scope of the stocktake?

Data assets refer to data products, infrastructure, and capability. Examples of data products include data measures like student achievement, data sets like the crime and victimisation survey data and climate data, and data tools like the Integrated Data Infrastructure (IDI).

The stocktake (and by extension, this Plan) assessed only Essential Data Assets. Essential Data Assets are distinguished from other data assets by virtue of their strategic importance to Government. They are used to, for example:

- develop public policy and make critical decisions
- measure the social, environmental and economic progress of New Zealand
- fulfil domestic legislative requirements and our responsibilities under Te Tiriti o Waitangi, and;
- satisfy international reporting obligations.



[2] https://www.kahuiraraunga.io/tawhitinuku

What assets are in greatest need of investment?

The table below presents the findings of the Essential Data Asset stocktake by the 64 groups. The totals exceed 64 because some data groups have more than one data asset.

Pillar [3]	Generally fit for purpose	Some development needed	Major development needed
Economy	13	5	3
Environment	0	8	10
Society	4	14	7
Populations of interest	1	5	6
Data integration assets	1	1	2
Iwi-Māori data needs and aspirations	1	3	2

All categories and associated data products under the environmental pillar require some or major development. There are major data gaps in understanding New Zealand's water quality and availability; ecosystems and the benefits New Zealand as a country derives from these systems; the generation and life cycle of waste; land use; natural disasters and the impacts of climate change.

The society pillar, Iwi-Māori data needs and aspirations, and populations of policy interest dimension contain some robust data products, but most categories require some or major development. There are major gaps in data about children, migrant populations, Iwi-Māori wellbeing, and geographic communities smaller than the regional level.

Data products that make up the categories under the economy pillar have had the most investment over time and, consequently, are the most well developed. This is because they comprise the largest number of Tier 1 Statistics - a list of high priority statistics approved by Cabinet in 2012.

What are populations of interest?

Populations of policy interest have been included in the stocktake as a cross-cutting dimension across the key pillars of society, environment and economy.

The stocktake has identified specific Essential Data Assets for the following populations: Iwi-Māori, Pacific peoples, migrants (including refugees), women, gender diverse peoples, disabled people, seniors, children, whānau/families, geographic communities, and socially and economically excluded groups (e.g. chronically unemployed, prisoners, digitally excluded people, and homeless people).

What are data integration assets?

Essential data integration assets include the portals, dashboards and tools that are used to bring together and disseminate data critical for decision making, monitoring progress and research. The highest profile of these tools are the Integrated Data Infrastructure and the Longitudinal Business Database.

Essential data integration assets also include a range of statistical frameworks and standards, core national registers (e.g. business, people, property, address, and biodiversity) and national datasets (e.g. imagery, rivers, and roads) and models.

What are Iwi-Māori data needs and aspirations?

In the context of this work, Iwi-Māori data needs and aspirations refer to building the capacity and capability of Iwi-Māori for the collection, management and governance of Iwi-Māori data, and those data asset groups that support Iwi-Māori data needs and aspirations.

[3] Alignment of the stocktake to the Treasury's Living Standards Framework was performed at the opportunity level. This is described in Appendix 4

How do we know that our findings reflect the aspirations of Iwi/Māori?

The process to understand the government's essential data assets and prioritise investment opportunities, has been underpinned by the mana ōrite relationship between Statistics New Zealand (Stats NZ) and the Data Iwi Leaders Group, as well as a robust consultation process.

What is the mana ōrite relationship?

The Data Iwi Leaders Group and Stats NZ have agreed to describe their Te Tiriti o Waitangi relationship as a mana ōrite relationship rather than a Treaty partnership, an acknowledgement that one of the most critical principles of Te Tiriti is the enduring relationship between the Crown and iwi/hapū.

Mana ōrite is understood as the parties having equal explanatory power within the operation of the relationship. This means that the parties acknowledge and accept each other's unique perspectives, knowledge systems and world views as being equally valid to decisions made under the relationship.

In 2019, Stats NZ and the Data Iwi Leaders Group signed the Mana Ōrite Relationship Agreement as a commitment to work together through agreed relationship principles, goals, and deliverables that will give effect to the mana ōrite relationship.

It is the first agreement of its kind between Iwi-Māori and the Crown and solidifies the value of data-driven insight in the growth and prosperity of Aotearoa.

What are the goals of the mana ōrite relationship?

Through working together and leveraging their strengths, the Data Iwi Leaders Group and Stats NZ seek:

- to develop strategies and policies, including operational approaches, that enable the current and future data needs and aspirations of Iwi-Māori throughout Aotearoa to be met more effectively
- stronger engagement and relationships between Stats NZ, iwi and hapū across Aotearoa and the capability to sustain these over time
- iwi-Māori having improved access to Iwi-Māori data and enhanced opportunities to co-create and co-develop future systems and data design across the public sector data ecosystem
- to identify and resolve key data gaps for Iwi-Māori in partnership with Iwi-Māori
- equity of outcomes with respect to iwi and Iwi-Māori data across the public data ecosystem to support decision-making and investment, and;
- to embed a te ao Māori lens in the way in which decisions are taken across the public sector data ecosystem.

How has the development of the Data Investment Plan included the mana ōrite relationship?

The stocktake of data assets was informed by a substantial body of knowledge that has grown from previous engagements with Iwi-Māori, including the Whānau Ora Outcomes Framework and Measuring Māori Wellbeing draft set of indicators created by Te Puni Kōkiri.

The prioritisation framework and process were reviewed and supported by the Data Iwi Leaders Group as a good way to prioritise investments in data collected by government. There was also engagement with Te Mana Raraunga (the Māori Data Sovereignty Network).

The outputs of the prioritisation process were reviewed by the Data Iwi Leaders Group.

It is our intention that future iterations of the Plan will have expanded Iwi-Māori involvement to reflect our improved knowledge of Iwi-Māori data assets and needs. Of key consideration will be the development of Iwi-Māori data capability within government, iwi and hapū, including an increased focus on Māori governance of Māori data.

What are our highest priority investment opportunities?

During the stocktake of Essential Data Assets, a large number of potential investment opportunities were identified. These were subsequently refined to create 90 investment opportunities that were scored against approved evaluation criteria.

The development of assessment criteria and the process to prioritise opportunities is described in Appendix Two.

Are there any themes in the prioritisation results?

A summary of the prioritisation process results is presented in the table below. Key themes from the results include the following:

- The Economy pillar opportunities tended to be of lower priority. This is a reflection of how economic data asset groups were generally the most well developed. The least developed economic data assets tended to be those relating to Household Economic Wellbeing, which are also markers of social wellbeing.
- The Environment pillar opportunities tended to be of higher priority. This reflects the relative weaknesses of the data available in the Environment pillar.
- Data integration assets tend to be of high priority because better managing and integrating existing data assets tends to realise benefits faster than investment in new datasets.
- Many opportunities in the Economy and Society pillars have a focus on supporting populations of interest, including those of high priority. Opportunities in the Populations of interest pillar are more cross-cutting in nature.
- Five opportunities in the top 30 were identified as enabling Iwi-Māori data needs and aspirations – these have been presented in this Plan in the pillar to which they align. Opportunities include: 'More accurate and frequent measurement of population' and 'Consistent measurement of ethnicity across government', both of which are in the Society pillar.

Pillar	Top 30	Next 60	Total
Economy	7	27	34
Environment	7	4	11
Society	8	19	27
Populations of interest	4	8	12
Data integration assets	4	2	6
Iwi -Māori data needs and aspirations[4]	5	1	6

[4] Included within other pillars

What are the highest priority investment opportunities?

The top investment opportunities from each pillar are described below, with the full listing provided as Appendix Three. Alignment of the top 30 opportunities to the Treasury's Living Standards Framework is provided as Appendix Four.

Economy pillar

Granular housing affordability and homelessness measurement

Current state	Data on housing affordability and homelessness has been produced using the IDI, but further work is required to develop robust measures. In particular, data is needed for populations of interest, which requires additional integrations to measure at the appropriate level of aggregation.
Opportunity	If further investment is made in the IDI, then housing affordability and homelessness can be calculated more quickly, on a more granular basis and with focus on populations of interest.
Status	Owner has initiated a proposal to fill the gap.
Responsible agencies	Ministry of Housing and Urban Development

Improved insights on child poverty and energy hardship

Current state	Understanding and monitoring the numbers and characteristics of households experiencing material hardship and/or poverty is essential for monitoring the Child Poverty Reduction Act 2018 as well as evaluating the effectiveness of interventions. The Longitudinal Survey of Income and Housing begins data collection in 2021/22 and the first results of persistent child poverty will become available from 2024. However, more granular data is needed to identify and monitor sub-groups experiencing material hardship/poverty.
Opportunity	If the data better identify households and living arrangements (e.g. whānau as economic unit), then a more nuanced understanding of child poverty can be achieved. Additional data can provide ancillary benefits; for example, by better measuring energy hardship, the Ministry of Business Innovation and Employment can better set policy and regulate the energy sector.
Status	Owner has initiated a proposal to fill the gap.
Responsible agencies	Stats NZ, Ministry of Social Development, Ministry of Business, Innovation and Employment

Environment pillar

Nationally Consistent measurement of land use over time at the parcel level

Current state	The Land Cover Database (LCDB), maintained by Manaaki Whenua – Landcare Research and funded by MBIE, is a nationally comprehensive land use map of New Zealand covering the dates: 1996, 2001, 2008, 2012 and 2018. However, we have no nationally consistent measure of land use to link local activities to local change and lack enough monitoring sites to provide reliable measurement of soil erosion, good data on soil health, and detailed elevation mapping across NZ and outlying islands at sub-metre resolution.
Opportunity	If we better understand land, its profile and its use, then we can better understand our greenhouse gas profile, water pollution (nutrient and particulate), the impact of removing vegetation on the flow of ecosystem services from native vegetation, and natural disaster risk profile.
Status	Owner plans a Budget bid within two years.
Responsible agencies	Ministry for the Environment

Enhanced and standardised climate change data

Current state	There is an increasing need to monitor the sources of emissions and impacts of climate change (e.g. impacts of climate change on biodiversity). Data collected on resilience (including Iwi-Hapū), impacts and vulnerabilities can be used to drive adaptation and mitigation strategies (e.g. forecasting and managing water inundation).
Opportunity	If we monitor our emissions well, then we will be able to keep stock of our carbon inventory and meet our national climate goals. Maintenance of the Greenhouse Gas Inventory is important for international reporting.
Status	The Climate Change Commission is currently considering data reporting standards and requirements.
Responsible agencies	Ministry for the Environment

Society pillar

More accurate and frequent measurement of population

Current state	New Zealand's primary source of information on population and subpopulation data is the Census. Over reliance on the Census can increase the risk profile of population data, resulting in undesired outcomes, and has inherent limitations (the Census is infrequent, and does not count some population groups, including Iwi and Māori, Pacific groups, as well as others).
Opportunity	If administrative data is used as New Zealand's primary source of population data, then our population data would become more frequent, accurate and more granular. More accurate population and subpopulation data has implications across government – for example, in determining health funding and setting electoral boundaries. There is also an opportunity to align with iwi/hapū concepts. This opportunity is an Iwi-Māori priority.
Status	Stats NZ's Census Transformation Programme undertook a series of investigations based on the 2013 Census to look at the ability of admin data sources to provide census-type information. This work accelerated in response to the 2018 Census (especially in regard to Iwi-Māori population data). The Census Transformation Programme will continue in the lead-up to Census 2023.
Responsible agencies	Stats NZ, many government and non-government bodies hold relevant administrative data.

Society pillar

Consistent measurement of ethnicity across government

Current state	Peoples' ethnic identity includes the ethnic group(s) they identify with as well as their ability to express their identity and speak their language. Currently, there are differences in how ethnicity is defined in administrative data; for example, Māori can identify themselves by ethnicity, descent, or iwi affiliation and Fijian Indians can be classified as Pacific peoples or Indian depending on how data is collected and aggregated.
Opportunity	If more consistent definitions are applied across administrative data, then data is more readily re-used and combined - enabling us to better draw insight from multiple data sources.
Status	This is not a current programme. Stats NZ plans a Budget bid within the next two years.
Responsible agencies	Stats NZ

Populations of Policy interest

Improved data on the wellbeing of children

Current state	There is limited availability of data measuring the wellbeing of children and their resilience. This has made it difficult to form a meaningful picture of how children are doing as a group and across different sub-groups (e.g. gap in data reflecting the child's view). There is a need for data that provides comprehensive coverage of different domains of wellbeing.
Opportunity	If we can measure child wellbeing using a more comprehensive set of measures and at a more granular level, then we will be able to better understand the population and identify areas in the system where intervention is required. Use of internationally comparable measures will also enable us to benchmark against other nations.
Status	Programme of work is underway.
Responsible agencies	Social Wellbeing Agency, Department of the Prime Minister and Cabinet, Te Puni Kōkiri

Additional data integrations to enhance visibility of populations of policy interest

Current state	Currently, there is limited availability of data on sub-national populations. The data collected is often unreliable because it is generally taken from samples (e.g. data on the wellbeing of Pacific Peoples).
Opportunity	If attributes are added to administrative data (to enable the identification of populations of policy interest) and data is integrated well, agencies will have better visibility of sub-national populations, then they can understand their needs and identify areas requiring intervention. This opportunity is an Iwi-Māori priority.
Status	Stats NZ does not have this in train as an independent project. It would benefit from a sector approach.
Responsible agencies	Stats NZ

Data integration assets

Improved quality of data and access to the Integrated Data Infrastructure

Current state	The Integrated Data Infrastructure (IDI) is a large research database that holds microdata about people and households. The data is about life events - such as, education, income, benefits, migration, justice, and health. The data is then linked together, or integrated, to form the IDI. Administrative data, particularly datasets that have been generated rather than collected or developed, often does not meet expectations around data quality for some of their downstream uses and maintaining data at this quality carries costs for agencies that provide it. The Integrated Data service has grown considerably in the last seven years, supporting over 700 customers working on around 300 different projects, and receives about 100 new project applications each calendar year. The use of the IDI is evolving and increasingly being used to solve real-time problems (e.g. assess wage subsidy effectiveness during COVID) rather than being limited to research. The IDI is also of increasing interest to Iwi-Māori, both in terms of data sovereignty and in developing specific insights pertaining to Iwi-Māori.
Opportunity	The service is integral to work across the system, but there is more value that could be gained by increasing the service offering for government users, expanding the customer base, looking to partner to provide more direct impact for communities across New Zealand, and work more closely with Treaty partners to enable achievement of their data aspirations. There is also an opportunity to improve data quality (consistent data and metadata) so that IDI becomes more widely usable.
Status	Stats NZ and contributing agencies have a continuous improvement approach in place.
Responsible agencies	Stats NZ, contributing agencies

Additional registers and foundational data

Current state	A register is a specific type of dataset listing all members of a defined population. It is the sole authoritative source of that information, kept complete, accurate and up-to-date. For example, the companies register administered by the Companies Office is the single, authoritative data source for company information. Key features of a register are persistent unique identifiers, immutable entries, and live data. Currently, there is no statistical person frame. Additionally, the business, property, address, district valuation roll, and biodiversity registers require further investment. Foundational data such as imagery, LIDAR, rivers, and roads centrelines are needed to underpin other data.
Opportunity	If more registers are established, then data is updated more frequently, is of higher quality, and is more readily linked to other datasets. This will enable more timely and rich insights as well as a focus on populations of interest. The establishment of registers needs to take account of social licence and be supported by sound governance to ensure ongoing public trust and confidence. This opportunity is an Iwi-Māori priority.
Status	Owner has initiated a proposal to fill the gap.
Responsible agencies	Stats NZ, contributing agencies

How will this Plan be implemented?

This Plan is a guiding document for future decisions to enable a better targeting of resources across the system, it is not specifically funded or directive. As a result, each investment opportunity will require funding – either from baseline or through the Budget and infrastructure investment pathways.

When are investments likely to occur?

The top 30 investment opportunities contain opportunities that are already in train, those that are expected to result in a Budget bid in the next two years, and new initiatives that will require substantial development before they are investment-ready. Some opportunities have dependencies on other programmes across government which means they can't be implemented at this time, others are subject to delivery constraints.

Prioritisation data and implementation considerations have been combined to form an early, indicative delivery roadmap (Appendix Five). This roadmap will be refined and validated each year and presented with each iteration of the Plan.

How will this Plan impact future Budget processes?

The Plan will play an important role in informing longer-term, strategic investment decisions made through the Budget process in two key ways.

First, the process of developing the Plan is helping agencies to identify opportunities for improvement and to develop and align joint Budget bids. A roadmap of existing programmes and potential Budget bids is set out in the next section.

Secondly, the Plan supports the Government Chief Data Steward to work with Investment Officials (the public service leaders for Construction, Data, Digital, Finance, Infrastructure and Investment, with responsibility for providing collaborative stewardship of the investment management system) to develop annual Budget guidance, strengthen the planning phase within the investment lifecycle and to provide advice to Investment Ministers on Budget bids.

The Government Chief Data Steward will also:

- help agencies to identify where there are opportunities to deliver to the plan within the scope of their responsibilities and functions, including within baseline
- provide system and tailored support to build the capability and capacity to deliver to the plan
- foster collaboration to improve the quality of data and to develop strategic approaches to collecting and sharing the data and;
- provide leadership in areas where there are competing interests and tensions, for example working through how to balance effort towards delivering to priorities while not compromising other key datasets, and where appropriate – making decisions to stop work to allow for priorities (in consultation with agency stakeholders).

How will this Plan impact existing activities?

While the Plan identifies and prioritises Essential Data Assets for new and/or further investment through the Budget process, there are also implications for ongoing data asset management.

The Plan highlights the state of the data system's Essential Data Assets and reinforces the need for the system to play an active and responsible role in maintaining these intangible assets through baseline funding, in the same way as agencies undertake standard capital asset management on behalf of New Zealanders.

What about non-prioritised assets?

This Plan does not preclude or impinge on investment in data investment opportunities that have not been prioritised in the Plan or are out of scope.

Agencies and the system in general will continue to be flexible and able to respond to ad-hoc and changing data needs – as has been reinforced by our response to COVID-19.

How does this Plan help with cybersecurity?

The Data Investment Plan does not explicitly address cyber security. However, cybersecurity risk was considered and addressed through the stocktake and prioritisation process.

Future iterations of the Plan will specifically address the infrastructure and capability requirements for good practice data security.

What's next?

This is the first iteration of the Plan, which prioritises opportunities for investing in data products. The next iteration of the plan will have broader coverage of Iwi-Māori data needs. Future iterations of the Plan will reflect shifting priorities and evolving technologies as well as have an increased focus on the infrastructure (including alignment with digital infrastructure priorities) and capability required to support the data system.

The Information Group, an existing cross-agency group of digital and data representatives at the general manager and deputy chief executive levels, will monitor the effectiveness of this Plan and govern the development of future Plans.

Appendix One – Glossary

Administrative data – data collected as part of the day-to-day business processes and record keeping of organisations.

Classification – a set of categories that represent distinct classes, groups or attributes of data.

Domain – part of the taxonomy for organising essential data assets which divides the pillars into topics.

Essential data assets – includes statistics, datasets and data infrastructure that are needed to generate insights and support critical decisions. Because they are reused over time, they need to be maintained to ensure they continue to deliver value.

Government Chief Data Steward – the government functional lead for data. The role supports the use of data as a resource across government to help deliver better services to New Zealanders. This is achieved through setting data standards and establishing common capabilities, developing data policy and strategy, and planning.

Government Chief Digital Officer – the government functional lead for digital, overseeing the development and management of digital for the state sector.

Government data system – includes the people and organisations that collect and use data; government data holdings (survey, administrative etc) and associated architecture and infrastructure; supporting components such as data access and common practices; and enablers such as protection mechanisms to ensure that data within the system is used in a safe way (Reference: Data Strategy and Roadmap).

Iwi-Māori Data – Iwi and Māori are and have been data designers, collectors and disseminators for countless generations. For some Māori, Māori data is a tāonga.

Māori data is data that is for, from or about Māori and the places they have connection with. It is data about or from iwi in terms of people, language, culture, resources, environments.

Cutting across this is the idea of both individual and collective wellbeing – that iwi are interested in how people fare individually as well as the collectives that they comprise. How each iwi defines the components of wellbeing, and their relative priority, shifts from iwi to iwi.

Measurement framework – a set of standard concepts, definitions and classifications for compiling measures within a particular domain or topic area.

Metadata – the information that defines and describes data.

Pillar – part of the taxonomy for organising essential data assets and includes the following: Economy, Society, Environment.

Population – the total membership or universe of a defined class of units which are the focus of interest. A population could consist of all the persons in a country, or those in a particular geographical location, or a specific ethnic group, depending on the purpose of the study. A population could also consist of non-human units such as farms, houses, business establishments or sheep.

Register – a complete list of units in a defined population. A statistical register is a register that is constructed and maintained for statistical purposes, according to statistical concepts and definitions, and under the control of statisticians. Administrative registers, such as birth and death registrations and a tax client register, can be used as sources for statistical registers.

Taxonomy – a schema for naming, organising and presenting essential data assets.

Tier 1 statistics – a list of the most important statistics needed to understand how well New Zealand is performing and to inform critical decision making. The list of Tier 1 statistics was approved by Cabinet in 2012.

Treasury Living Standards Framework – The Treasury's perspective on what matters for New Zealanders' wellbeing, now and into the future. It is a flexible framework that prompts thinking about policy impacts across the different dimensions of wellbeing, as well as the long-term and distributional issues and implications. It includes twelve domains of current wellbeing outcomes, four capital stocks that support wellbeing and risk and resilience.

Appendix Two – Process to identify and prioritise investment opportunities

The Data Investment Plan was developed in a three-step process with consultation occurring at each step. The steps were as follows:

- Perform a stocktake – forming a single cross-government view of all existing data products alongside an assessment of their current state. Identifying domain and subject areas where there are gaps or quality issues.
- Prioritisation – the setting of assessment criteria and processes to prioritise where activity and investment is most needed across essential data assets.
- Pipeline – developing an early roadmap for change.

How were the data assets identified?

From March 2020 to June 2021 a cross-agency working group completed a stocktake of the data system's Essential Data Assets (EDAs) and identified key data gaps. This work was informed by adopting a system-wide view of what New Zealand's enduring information needs are.

The stocktake of data assets was informed by a body of knowledge that has grown from previous engagements with Iwi-Māori, including the Whānau Ora Outcomes Framework and Measuring Māori Wellbeing draft set of indicators created by Te Puni Kōkiri.

How were the data assets classified?

The data system is complex, with multiple externalities that affect both system assets and the use of these assets. While designing the stocktake, the Working Group first created a classification system to make the stocktake more accessible to non-data scientists.

The classification system comprises three high-level pillars: economy, environment, and society. The three pillars are subdivided into domains and, beneath these, eighty categories organise the essential data products related to that category (as well as identifying the data gaps).

The system was informed by the Treasury's Living Standards framework, the Tier 1 statistics and international approaches.

There are also three cross-cutting dimensions – Iwi-Māori data needs and aspirations, populations of policy interest and data integration assets – which cut across the pillars.

How was performance assessed?

The working group assessed categories of data products as being generally fit for purpose, in need of some development, or in need of major development (e.g. where there may be no current methodology known to fill the data gap).

Who reviewed the findings?

The Information Group governed the development of the Plan. The Information Group is a cross-agency governance group of digital and data general managers and deputy chief executives. It is chaired by the Government Chief Data Steward.

What was the prioritisation framework?

Having agreed the Stocktake and data gaps, in July 2021 the Working Group developed assessment criteria (based on approved design principles) by which the data gaps were prioritised for investment.

The framework was supported by the Data Iwi Leaders Group as a good way of prioritising government investment in data collected by the government. The assessment criteria and weightings (overleaf) were approved by the Information Group.

How was prioritisation done?

In July-August 2021, a sub-group of the Working Group assessed the 90 opportunities and scored each opportunity against the assessment criteria.

This assessment was sequentially reviewed by the wider Working Group, the Data Iwi Leaders Group, and the Information Group.

How was the pipeline prepared?

In August 2021, a sub-group of the Working Group assessed the 30 highest ranked opportunities, considered the complexity of investment, any dependencies and what was already underway to prepare the pipeline.

This assessment was sequentially reviewed by the Data Iwi Leaders Group, and the Information Group.

Evaluation – a binary assessment against weighted criteria

A. Government priorities (9%)

- **9%** Would filling the gap contribute significantly to any of the Government priorities[5] listed below?
    - Climate change response.
    - Reduce social inequalities and child poverty.
    - Improve housing affordability and reduce homelessness.
    - Accelerate COVID-19 recovery.

B. Attractiveness (73%)

- **14%** Would filling the gap contribute significantly to addressing one or more enduring information needs:
    - Contributes to one, OR
    - Contributes to two or more.
- **18%** Would filling the gap contribute significantly to any elements of the integration goal of the NZ Data Strategy listed below?
    - Consolidate foundational data that underpins integration (e.g. registers, classifications and standards).
    - Improve interoperability across the system (e.g. data is designed to be shared, integrated and re-used).
    - Net decrease of data provider burden across the system.
- **14%** Would filling the gap contribute significantly to any elements of the inclusivity goal of the NZ Data Strategy listed below?
    - Make data about Iwi-Māori more visible, OR
    - Make another population of policy interest group more visible, OR
    - Address an Iwi-Māori high priority data need, OR
    - Address a high priority data need relevant to another population of policy interest group, OR
    - Support improved measurement of diversity or equity (e.g. small populations and geographical communities).
- **9%** Would filling the gap contribute significantly to Iwi-Māori data needs and aspirations?
    - Essential Iwi-Māori data infrastructure, OR
    - Reducing Iwi-Māori data dependency on the Crown, OR
    - Empowering data-driven decision-making in te ao Māori, OR
    - Ability for Iwi-Māori to design or co-design data.
- **9%** Does failure to invest create unacceptable risk to the quality of the EDA for any of the following reasons?
    - Ongoing funding of the EDA has or will cease, OR
    - Current funding is not sufficient to maintain the fitness of the EDA for its prime purpose(s).
- **9%** Will addressing the gap deliver value by enabling any of the following:
    - Evaluation research examining causal impacts to identify what works, for whom, and in what circumstances, OR
    - Evidence and feedback that enables service providers to make more robust decisions in the context of their clients' lives, OR
    - Supports cross-domain analysis or thought leadership analysis.

C. Achievability (18%)

- **9%** Is there a high probability that a proposal to fill the gap could be delivered within the next two years?
- **9%** Has the agency initiated any work to fill the gap? (e.g. a proposal or business case has been or is being prepared).

[5] Budget Policy Statement 2021

Appendix Three – Opportunity profiles

In this appendix, we describe the top 30 investment opportunities, separated by pillar.

The titles of the next 60 opportunities are also listed.

Economy pillar

Granular housing affordability and homelessness measurement

Current state	Data on housing affordability and homelessness has been produced using the IDI, but further work is required to develop robust measures. In particular, data is needed for populations of interest, which requires additional integrations to measure at the appropriate level of aggregation.
Opportunity	If further investment is made in the IDI, then housing affordability and homelessness can be calculated more quickly, on a more granular basis and with focus on populations of interest.
Status	Owner has initiated a proposal to fill the gap.
Responsible agencies	Ministry of Housing and Urban Development

Improved insights on child poverty and energy hardship

Current state	Understanding and monitoring the numbers and characteristics of households experiencing material hardship and/or poverty is essential for monitoring the Child Poverty Reduction Act 2018 as well as evaluating the effectiveness of interventions. The Longitudinal Survey of Income and Housing begins data collection in 2021/22 and the first results of persistent child poverty will become available from 2024. However, more granular data is needed to identify and monitor sub-groups experiencing material hardship/poverty.
Opportunity	If the data better identify households and living arrangements (e.g. whānau as economic unit), then a more nuanced understanding of child poverty can be achieved. Additional data can provide ancillary benefits; for example, by better measuring energy hardship, the Ministry of Business Innovation and Employment can better set policy and regulate the energy sector.
Status	Owner has initiated a proposal to fill the gap.
Responsible agencies	Stats NZ, Ministry of Social Development, Ministry of Business, Innovation and Employment

New data to define and measure the size and value of the digital economy

Current state	It is difficult to measure the size and value of New Zealand's digital economy. Work needs to be done to define what a digital economy is and how to measure it. This will enable us to form conclusions on the productivity and production of this sector within the New Zealand economy.
Opportunity	If the size and value of New Zealand's digital economy is understood, then it enables agencies to support areas of growth and gain better insight into the economy. The importance of this sector has been shown during the COVID 19 pandemic.
Status	Underway.
Responsible agencies	Stats NZ, Ministry of Business, Innovation and Employment

Economy pillar

Additional satellite accounts for tourism, health and labour

Current state	There is limited availability of data showing the contribution of the tourism, labour and health sectors to the economy by region. This is important for agencies to understand the performance of industries and where the most value is gained (e.g. we are unable to determine the value of Chinese tourist spend by region).
Opportunity	If satellite accounts can be measured accurately, then agencies can understand where value is being produced and where future opportunities lie.
Status	There is currently work underway to develop the tourism satellite account.
Responsible agencies	Stats NZ

Additional data on wellbeing of business owners

Current state	A longitudinal business database is used to obtain data. A finer level of data granularity is required to understand the wellbeing and demographics of business owners. More work needs to be done to gather data surrounding small and self-employed businesses.
Opportunity	If the wellbeing and demographics of business owners is understood, then agencies can understand the sustainability of New Zealand businesses in various economic climates.
Status	Stats NZ use a longitudinal database to obtain current data. MBIE has initiated a survey targeted at business owners and the impacts of COVID-19. However, these surveys have not been consolidated.
Responsible agencies	Ministry of Business, Innovation and Employment

Clearly defined Māori businesses

Current state	There is under coverage of Māori businesses in existing data. Further development of definitions relating to Māori, Pacific peoples, tourism and foreign-held business need to be established to understand these businesses. Some core Māori businesses are registered on IRD databases.
Opportunity	If all Māori businesses are able to be identified and good data is collected, then agencies will be able to monitor the health of these businesses and benchmark them across their respective industries.
Status	Work is underway to define Māori business. Regulatory definitions have been developed under the Tax Act but do not provide full coverage.
Responsible agencies	Stats NZ, Ministry of Business, Innovation and Employment, Te Puni Kōkiri

Economy pillar

Updated occupation definitions and visibility of pay gaps for populations of interest

Current state	There are issues with the quality and frequency of detailed occupational data. Data is collected every 5 years via the Census leading to large gaps. Detailed earnings data is not readily available and it is difficult to undertake pay-gap analysis on population sub-groups (e.g. ethnic groups, disabled people) due to a lack of agreed standards. There is also work to be done on the Australian and New Zealand Standard Classification of Occupations to better reflect New Zealand's work culture.
Opportunity	If granular occupation and earnings data is collected, then agencies will be able to analyse pay gaps within sub-national populations. This could then be used to improve working conditions for sub-national populations and improve their socio-economic outcomes.
Status	A programme of work is being developed.
Responsible agencies	Stats NZ, Public Service Commission and Ministry of Business, Innovation and Employment

Further opportunities

New integrations to provide insights on firm-level productivity	New measures on the economic impact of visitors
Additional data collected about traffic	Data on quality and resilience of physical infrastructure (including transport, telecommunications etc) made more available
Improved data is needed on housing instability	Business Operations Survey expanded to public sector organisations
Enhanced calculation of regional GDP	Enhanced debt market statistics
Better price commodity balancing to achieve a more coherent set of GDP data	Enhanced financial sector balance sheet
Additional data collected about the accommodation sector	New measures on foreign-held businesses
Pacific Peoples businesses clearly defined	Enhanced data on demand for, use of, trust in and outcomes of digital services
Improved data on access to services and infrastructure	More systematic measurement of the nature and terms of work
Improved data on household debt	Intergenerational transfer accounts developed
Maintenance of existing economic data	Death of a closed company clearly defined
Enhanced quarterly national accounts	

Environment Pillar

Nationally consistent measurement of land use over time at the parcel level

Current state	The Land Cover Database (LCDB), maintained by Manaaki Whenua – Landcare Research and funded by MBIE, is a nationally comprehensive land use map of New Zealand covering the dates: 1996, 2001, 2008, 2012 and 2018. However, we have no nationally consistent measure of land use to link local activities to local change and lack enough monitoring sites to provide reliable measurement of soil erosion, good data on soil health, and detailed elevation mapping across NZ and outlying islands at sub-metre resolution.
Opportunity	If we better understand land, its profile and its use, then we can better understand our greenhouse gas profile, water pollution (nutrient and particulate), the impact of removing vegetation on the flow of ecosystem services from native vegetation, and natural disaster risk profile.
Status	Owner plans a Budget bid within two years.
Responsible agencies	Ministry for the Environment

Enhanced and standardised climate change data

Current state	There is an increasing need to monitor the sources of emissions and impacts of climate change (e.g. impacts of climate change on biodiversity). Data collected on resilience (including Iwi-Hapū), impacts and vulnerabilities can be used to drive adaptation and mitigation strategies (e.g. forecasting and managing water inundation).
Opportunity	If we monitor our emissions well, then we will be able to keep stock of our carbon inventory and meet our national climate goals. Maintenance of the Greenhouse Gas Inventory is important for international reporting.
Status	The Climate Change Commission is currently considering data reporting standards and requirements.
Responsible agencies	Ministry for the Environment

Centralised and enhanced data on the impact of natural disasters

Current state	There is limited availability of data on the social, economic and environmental impacts of natural disasters. New Zealand has an obligation to report under the Sendai framework focusing on the adoption of measures to address disaster risk. There is no centralised data relating to the cost of a natural disaster (including mortality, injury, displacement, and asset damage). Emphasis needs to be placed on measuring the impacts and costs of these events.
Opportunity	If the cost of natural disasters can be measured, then agencies can put strategies in place to minimise the impacts of these events.
Status	Work has been initiated in this area but it has not been coordinated (e.g. insurance companies).
Responsible agencies	Ministry for the Environment, Ministry of Business, Innovation and Employment

Environment Pillar

Additional water quality data collection sites

Current state	There is limited monitoring of biological, chemical and particulate contaminants within waterways with data collection and standards are inconsistent across the regions. There is a need for a national database to understand water quality across the country, and monitor the flow of pollutants as they move through catchments.
Opportunity	If additional water quality data is collected, then agencies will be able to monitor and understand the flow of pollutants through New Zealand's waterways.
Status	A programme of work is being developed.
Responsible agencies	Ministry for the Environment

Additional data on aquifer health and groundwater abstraction

Current state	There is limited data relating to water stored in aquifers and the quantity of water taken from lakes and rivers. This has made it difficult to measure our water stocks at any point in time. A lack of understanding could lead to overuse of water systems leading to negative environmental outcomes (e.g. an overused aquifer will draw water and nutrients away from the surface).
Opportunity	If we understand our water stocks, then we can manage water more effectively, including the effects of projected climate change on the flow of water in rivers and aquifers.
Status	A programme of work is being developed.
Responsible agencies	Ministry for the Environment

New conceptual and measurement framework for ecosystem services

Current state	There is limited data collected on New Zealand’s ecosystem services. A measurement framework has not been developed and it is difficult to measure the benefits provided by our ecosystems (e.g. the benefit of pollination in our agriculture sector).
Opportunity	If we understand the benefits our ecosystems provide, then we can monitor the health of these systems and protect our most valuable resources.
Status	No programme in place.
Responsible agencies	Ministry for the Environment, Department of Conservation

Environment Pillar

Data on waste meets international standards

Current state	There is limited data available on the generation, recycling, reuse and disposal of waste. The data that is collected is not sufficient for the System of Environmental Economic Accounting (SEEA) reporting. More data is required to gain an understanding of New Zealand's waste.
Opportunity	Improving the quality of our waste data is necessary to support our ability to develop and evaluate effective policies and actions, and to support better monitoring and compliance. Better data will allow us to track our progress toward a circular economy.
Status	Programme is underway.
Responsible agencies	Ministry for the Environment, Ministry of Business, Innovation and Employment

Further opportunities

Improved data is needed on ecosystem extent/condition - freshwater, marine and terrestrial. Existing data is incomplete.
Improved data on the conservation status of species.
More comprehensive monitoring of air quality.
Enhanced biodiversity data and collections with new genomic information.

Society Pillar

More accurate and frequent measurement of population

Current state	New Zealand's primary source of information on population and sub-national population data is the Census. Over reliance on the Census can increase the risk profile of population data, resulting in undesired outcomes, and has inherent limitations (the Census is infrequent and does not count some population groups, including Iwi and Maori, Pacific groups, as well as others).
Opportunity	If administrative data is used as New Zealand's primary source of population data, then our population data would become more frequent and accurate. More accurate population and subpopulation data has implications across government – for example, in determining health funding and setting electoral boundaries. This opportunity is an Iwi-Māori priority.
Status	Stats NZ's Census Transformation Programme undertook a series of investigations based on the 2013 Census to look at the ability of admin data sources to provide census-type information. This work accelerated in response to the 2018 census (especially in regard to Iwi-Māori population data). The Census Transformation Programme will continue in the lead-up to Census 2023.
Responsible agencies	Stats NZ, many contributing government and non-government bodies hold relevant administrative data.

Consistent measurement of ethnicity across government

Current state	Peoples' ethnic identity includes the ethnic group(s) they identify with as well as their ability to express their identity and speak their language. Currently, there are differences in how ethnicity is defined in administrative data; for example, Māori can identify themselves by ethnicity, descent, or iwi affiliation and Fijian Indians can be classified as Pacific peoples or Indian depending on how data is collected and aggregated.
Opportunity	If more consistent definitions are applied across administrative data, then data is more readily re-used and combined - enabling us to better draw insight from multiple data sources.
Status	This is not a current programme. Stats NZ plans a Budget bid within the next 2 years.
Responsible agencies	Stats NZ

Sustainable and enhanced crime victims data

Current state	New Zealand collects its victimisation data through the New Zealand Crimes and Victims survey (NZCVS). This survey is funded annually through a contestable research pool. Limited data is available from the survey on some types of victimisation (e.g. child abuse, abuse of disabled people, elderly abuse).
Opportunity	If baseline funding was secured for the NZCVS, then the Ministry of Justice can have confidence any improvements made to the survey would have lasting benefits. Multiple agencies reliant on this data will continue to develop insights and form strategies around their findings. Robust sources of data will be provided for both national and international reporting (e.g. Indicators Aotearoa, UN Sustainable Development Goals).
Status	Funded partly through baseline (40%) and partly through a research pool which is contestable (60%).
Responsible agencies	Ministry of Justice

Society Pillar

Centralised Primary health care data

Current state	New Zealand does not have a nationally held collection of primary health care data. There are no data reporting standards leading to difficulties in collating health data from different providers. This has previously led to underestimation of certain diseases and illnesses.
Opportunity	If standardised data reporting is established, this will enable a better understanding of individual health outcomes and support preventative treatment.
Status	Stats NZ has not initiated any work as New Zealand's health system is undergoing large scale change. As part of this change the Ministry of Health will look to establish national data reporting standards.
Responsible agencies	Ministry of Health

Better characterised mental health and addiction data

Current state	There is limited availability of data surrounding mental health and addiction. Most mental health and addiction patients are referred to primary care providers where a lack of national data reporting standards has made it difficult to collate information.
Opportunity	If agencies have access to improved data, then they will be able to further understand the population experiencing mental health illnesses and develop future strategy.
Status	Under consideration.
Responsible agencies	Ministry of Health

New conceptual and measurement framework for equity

Current state	It is difficult to understand equity within New Zealand. A conceptual and measurement framework of equity has not been established. Data lacks the granularity required to form meaningful conclusions, particularly within disadvantaged sub-national populations.
Opportunity	If we can understand equity within our society, then we can identify areas for improvement and put measures in place to avoid negative outcomes in education, justice and health for our disadvantaged groups.
Status	A programme of work is being developed.
Responsible agencies	Ministry of Social Development, Ministry of Health, Ministry of Justice, Social Wellbeing Agency, Ministry of Education, Ministry of Business, Innovation and Employment, Te Puni Kōkiri

Society Pillar

More frequent data on unpaid and voluntary work

Current state	There is a lack of data on unpaid and voluntary work. The last Time Use Survey was completed in 2009. This survey captures data on unpaid and voluntary work but sufficient robustness for populations of policy interest.
Opportunity	If frequent data on unpaid and voluntary work is captured, then agencies can understand the contribution made by households and the not-for-profit sector and areas that require support.
Status	A programme of work is being developed.
Responsible agencies	Stats NZ

New measures for family and whānau wellbeing

Current state	There is a lack of data surrounding family and whānau social and economic wellbeing. Existing data is predominantly from Te Kupenga, the Māori wellbeing survey, carried out every 10 years. Measures of wellbeing focus predominantly on the individual and not family units. An understanding of how to measure family wellbeing needs to be developed before data can be collected.
Opportunity	If family and whānau wellbeing can be measured, then agencies can determine which families need support and how to provide that support.
Status	In pipeline.
Responsible agencies	Ministry of Social Development, Te Puni Kōkiri, Stats NZ, Social Wellbeing Agency

Further opportunities

Standardised injury definitions	More timely health expectancy and cause of death data
Families / whānau identified in administrative data	Broader measures of democratic participation, including global citizenship
De facto partnerships identified in administrative data	New data on education experiences and barriers to participation
New measure on recidivism	Improved availability of data on organised crime
Improved monitoring of engagement in cultural activities	Broader measures of institutional trust that adhere to OECD guidelines
Improved measurement of identity groups and their outcomes	Enhanced data on the quality, costs and barriers to Early Childhood Education participation
New measures for subjective wellbeing	Regular assessment of the costs of crime
Improved data on access to community support	Relaunched Public Perceptions of Crime Survey
New conceptual and measurement framework for Wairau / spiritual health	Improved data on progression through the education system, informal education and training
Enhanced skills classification framework and improved data on competencies, including digital literacy	

Populations of Policy Interest

Improved data on the wellbeing of children

Current state	There is limited availability of data measuring the wellbeing of children and their resilience. This has made it difficult to form a meaningful picture of how children are doing as a group and across different sub-groups (e.g. gap in data reflecting the child's view). There is a need for data that provides comprehensive coverage of different domains of wellbeing.
Opportunity	If we can measure child wellbeing using a more comprehensive set of measures and at a more granular level, then we will be able to better understand the population and identify areas in the system where intervention is required. Use of internationally comparable measures will also enable us to benchmark against other nations.
Status	Programme of work is underway.
Responsible agencies	Social Wellbeing Agency, Department of the Prime Minister and Cabinet, Te Puni Kōkiri, Stats NZ

Additional data integrations to enhance visibility of populations of policy interest

Current state	There is limited availability of data on sub-national populations. The data collected is often unreliable because it is generally taken from samples (e.g. data on the wellbeing of Pacific peoples ethnic groups).
Opportunity	If attributes are added to administrative data (to enable the identification of populations of policy interest) and data is integrated well, agencies will have better visibility of sub-national populations, then they can understand their needs and identify areas requiring intervention.
Status	Stats NZ does not have this in train as an independent project. It would benefit from a sector approach.
Responsible agencies	Stats NZ

Improved availability and standards for community level data

Current state	There is limited availability of data on community wellbeing. Improved availability and standards are needed for community level data. Most government data is focused at a national level and all surveys are too small to provide robust data below the regional level. This is further exacerbated when disaggregated by other characteristics (e.g. ethnicity).
Opportunity	If community wellbeing is understood, then we can begin to understand the drivers and put strategies in place to improve population wellbeing. This would enhance social outcomes and reduce the strain on related services (e.g. health).
Status	The Social Wellbeing Agency has work underway to help quantify the wellbeing of communities around the country.
Responsible agencies	Social Wellbeing Agency

Populations of Policy Interest

New te ao Māori measures of wellbeing

Current state	There is limited data available on Māori wellbeing that reflects te ao Māori perspectives. This data is predominantly obtained from the Census and Te Kupenga, the Māori wellbeing survey. More frequent data supported by improved infrastructure which shows Māori perspectives, priorities, language, access to services and control is needed, at both a national and local level.
Opportunity	If Māori wellbeing can be measured, then Māori are better positioned to achieve mana motuhake.
Status	Underway
Responsible agencies	Te Puni Kōkiri

Further opportunities

Further additional measures for family and whānau wellbeing
Improved measurement of marginalised groups and their outcomes
Improved data on carers
Improved measurement of people with disabilities, including psychiatric and psychological disabilities
Improved measurement of migrants and their outcomes
Improved measurement of refugees and their outcomes
Improved measurement of the wellbeing of Pacific groups, including data that reflect Pacifica perspectives
More granular age data for those aged over 65, including those in non-private households

Data integration Assets

Improved quality of data and access to the Integrated Data Infrastructure

Current state	The Integrated Data Infrastructure (IDI) is a large research database that holds microdata about people and households. The data is about life events - such as, education, income, benefits, migration, justice, and health. The data is then linked together, or integrated, to form the IDI. However, administrative data, particularly datasets that have been generated rather than collected or developed, often does not meet expectations around data quality for some of their downstream uses and maintaining data at this quality carries costs for agencies that provide it. The Integrated Data service has grown considerably in the last seven years, supporting over 700 customers working on around 300 different projects, and receives about 100 new project applications each calendar year. The use of the IDI is evolving and increasingly being used to solve real-time problems (e.g. assess wage subsidy effectiveness during COVID) rather than being limited to research. The IDI is also of increasing interest to Iwi-Māori, both in terms of data sovereignty and in developing specific insights pertaining to Iwi-Māori.
Opportunity	The service is integral to work across the system, but there is more value that could be gained by increasing the service offering for government users, expanding the customer base, looking to partner to provide more direct impact for communities across New Zealand, and work more closely with Treaty partners to enable achievement of their data aspirations. There is also an opportunity to improve data quality (consistent data and metadata) so that IDI becomes more widely usable to use. This opportunity is an Iwi-Māori priority.
Status	Stats NZ and contributing agencies have a continuous improvement approach in place.
Responsible agencies	Stats NZ, Toitū Te Whenua, Ministry of Business, Innovation and Employment, Ministry for the Environment, Ministry of Primary Industries

Additional registers and accompanying and foundational data

Current state	A register is a specific type of dataset listing all members of a defined population. It is the sole authoritative source of that information, kept complete, accurate and up-to-date. For example, the companies register administered by the Companies Office is the single, authoritative data source for company information. Key features of a register are persistent unique identifiers, immutable entries, and live data. Currently, there is no statistical person frame. Additionally, the business, property, address, district valuation roll and biodiversity registers require further investment. Foundational data such as imagery, LIDAR, rivers, and roads centrelines are needed to underpin other data.
Opportunity	If more registers are established, then data is updated more frequently, is of higher quality, and is more readily linked to other datasets. This will enable more timely and rich insights as well as a focus on populations of interest. The establishment of registers needs to take account of social licence and be supported by sound governance to ensure ongoing public trust and confidence. This opportunity is an Iwi-Māori priority.
Status	Owner has initiated a proposal to fill the gap.
Responsible agencies	Stats NZ, Toitū Te Whenua, Ministry of Business, Innovation and Employment, Ministry for the Environment, Ministry of Primary Industries

Data integration Assets

Standardised system-wide data governance

Current state	Data governance is the combination of people, policies, standards, processes, and technology that enables data to be available, usable, consistent, coherent and secure. Although significant guidance exists to support good data governance, currently there is no system governance layer. As a result, each entity makes individual choices and there is divergence in practice.
Opportunity	If consistent data governance is put in place, then data use becomes more efficient, reusable and comparable. Governance is also important to ensure that the ways in which data is used are consistent with public expectation. Specific immediate opportunities relate to the establishment of Health New Zealand and the new Māori Health Authority and a requirement for consistent health data and Māori data across the system. There is also an immediate opportunity to further define and implement the Waka Hourua model of Māori Data Governance co-designed between Kawanatanga and te ao Māori participants in 2020, as outlined in the Tawhiti Nuku[5] report. This opportunity is an Iwi-Māori priority.
Status	Owners have initiated a proposal to fill the gap.
Responsible agencies	Stats NZ, Ministry of Health

Standardised data rules and aggregation

Current state	Existing data standards are not being implemented consistently across government. A lack of consistent business rules, data formats and levels of aggregation mean that data sets cannot be easily combined for cross-agency data sharing (e.g. many regions are developing their own collections, without the use of data standards).
Opportunity	If data is standardised, then agencies will be able to use data collected by other organisations and in different regions. This can be used to develop meaningful insights and conclusions. This opportunity is an Iwi-Māori priority.
Status	No active programme.
Responsible agencies	Stats NZ

Further opportunities

Improved standardisation of metadata across collections
New tools to address emerging issues

[5] https://www.kahuiraraunga.io/tawhitinuku

Iwi-Māori data needs and aspirations

This dimension comprises four elements:

- Essential Iwi-Māori data infrastructure
- Reducing Iwi-Māori data dependency on the Crown
- Empowering data driven decision-making in te ao Māori
- Ability for Iwi-Māori to design or co-design data.

Specific opportunities included under this dimension, which have been incorporated into opportunities included under other pillars and dimensions include:

- More accurate population estimates
- Consistent business rules to support data sharing and interoperability
- Data registers and supporting infrastructure to enable data integration and reuse
- Data governance to ensure system assets are managed appropriately, readily accessible, and protected
- IDI – improved range and ingestion of incoming data sets
- Consistent measurement of ethnic identity, including Māori descent and iwi affiliation.

Appendix Four – Alignment of opportunities to the Treasury's Living Standards Framework (LSF)

LSF Categories	Prioritised gaps
Subjective well being	
Health	• Centralise Primary Health Care data • More comprehensive mental health and addiction data
Knowledge and skills	
Jobs and earnings	• Detailed occupational data and visibility of pay gaps for populations of interest
Cultural identity	• Develop te ao Māori measures of wellbeing • Consistent measurement of ethnicity across government
Time use	• More frequent data on unpaid and voluntary work
Social connections	
Housing	• Granular housing affordability and homelessness measurement
Civic engagement and governance	
Safety	• Sustainable and enhanced crime victim's data
Income and consumption	• Improved insights on child poverty and energy hardship
Environment	• New conceptual and measurement framework for ecosystem service • Data on generation, reuse and disposal of waste • Centralised and enhanced data on impacts of natural disasters
Social capital	
Human capital	
Natural capital	• Enhanced and standardised climate change data • Nationally consistent measurement of land use over time at the parcel level • Additional water quality data collection sites • Additional data on aquifer health and groundwater extraction
Financial and Physical capital	• Additional satellite accounts for tourism, health and labour

LSF Categories	Prioritised gaps
No equivalent category in LSF	• Improved data on the wellbeing of children • Improved availability and standards are needed for community level data • New measures for family and whānau wellbeing • New conceptual and measurement framework for equity • More accurate and frequent measurement of population • Standardised data rules and aggregations • Additional registers and foundational data • Standardised system-wide data governance • Improved quality of data and access to the Integrated Data Infrastructure • Additional data on wellbeing of business owners • Clearly defined Māori businesses • Digital economy • Additional data integrations to enhance visibility of populations of policy interest

Appendix Five – Indicative delivery roadmap

The top 30 investment opportunities contain opportunities that are already in train, those that are expected to result in a Budget bid in the next two years, and new initiatives that will require substantial development before they are investment-ready. Some opportunities have dependencies on other programmes across government which means they can't be implemented at this time, others are subject to delivery constraints.

Prioritisation data and implementation considerations have been combined to form an indicative roadmap (with the highest priority investments in each pillar in **bold** and responsible agencies identified). This roadmap indicates when each project would be completed.

The roadmap will be refined and validated each year and presented with each iteration of the Plan.

Completion window			
Pillar/ Dimension	**Years 1-3**	**Years 4-7**	**Years 8-10**
Economy	• **Improved insights on child poverty and energy hardship** (MSD, MBIE, Stats NZ) • Clearly defined Māori businesses (Stats NZ, TPK, MBIE) • New data to define and measure the size and value of the digital economy (Stats NZ, MBIE)	• **Granular housing affordability and homelessness measurement** (HUD) • Updated occupation definitions and visibility of pay gaps for populations of interest (Stats NZ, PSC, MBIE)	• Additional data on wellbeing of business owners (MBIE) • Additional satellite accounts for tourism, health and labour (Stats NZ)
Environment	• **Nationally consistent measurement of land use over time at the parcel level** (MfE) • **Enhanced and standardised climate change data** (MfE)	• Data on waste meets international standards (MfE, MBIE) • Additional water quality data collection sites (MfE) • Additional data on aquifer health and groundwater abstraction (MfE)	• Centralised and enhanced data on the impact of natural disasters (MfE, MBIE) • New conceptual and measurement framework for ecosystem services (MfE, DoC)
Society	• **More accurate and frequent measurement of population** (Stats NZ) • Sustainable and enhanced crime victim's data (MoJ)	• **Consistent measurement of ethnicity across government** (Stats NZ) • Centralized Primary Health Care data (MoH) • Better characterised mental health and addiction data (MoH) • More frequent data on unpaid and voluntary work (Stats NZ)	• New conceptual and measurement framework for equity (MSD, SWA, MoE, MoH, MoJ, MBIE, TPK) • New measures for family and whānau wellbeing (Stats NZ, TPK, MSD, SWA)
Populations of Policy Interest	• **Improved data on the wellbeing of children** (SWA, Stats NZ, DPMC, TPK) • New te ao Māori measures of wellbeing (TPK)		• **Additional data integrations to enhance visibility of populations of policy interest** (Stats NZ) • Improved availability and standards for community level data (SWA)
Data Integration	• **Improved quality of data and access to the Integrated Data Infrastructure** (Stats NZ, Toitū Te Whenua, MBIE, MfE, MPI) • **Standardised system-wide data governance** (Stats NZ, MoH)	• Additional registers and foundational data (Stats NZ, Toitū Te Whenua, MBIE, MfE, MPI)	• Standardised data rules and aggregations (Stats NZ)

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