



**Australian Government**

**Australian Institute of  
Health and Welfare**

*Authoritative information and statistics  
to promote better health and wellbeing*

Mr Peter Harris AO  
Chairman  
Productivity Commission  
Level 12, 530 Collins Street  
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Dear Mr Harris

**Inquiry into the national evidence base for school and early childhood education**

The Australian Institute of Health and Welfare (AIHW) welcomes the opportunity to make a submission to the Productivity Commission's Inquiry into the further development of the national evidence base for school and early childhood education as requested by the Treasurer in March 2016. This submission summarises the extensive experience AIHW has gained from working closely with national education data, its stakeholders and using data linkage methods to explore fundamental policy questions.

The AIHW is a major national agency set up by the Australian Government in 1987 as an independent corporate Commonwealth entity within the Health portfolio. Our mission is to provide authoritative information and statistics to promote better health and wellbeing. We provide timely, reliable and relevant information and statistics on hospitals and other health services, aged care, child care, services for people with disabilities, housing assistance, youth justice and other community services.

We collect data and manage national data collections in these areas, producing over 150 information products each year. Our work is frequently referenced by the media. We also provide information to other government bodies and cross-jurisdictional councils, to external researchers and also directly back to data providers. We report in formats that suit their purposes and allow them to place their service provision in a wider context.

We also develop, maintain and promote data standards to ensure that data collected are nationally consistent. In all these activities, we enable governments and the community to make better informed decisions to improve the health and wellbeing of Australians.

We trust that you find this information useful to your inquiry. Should the committee have any queries about the information I have provided or wish to seek additional data from the AIHW, please contact Dr Fadwa Al-Yaman, Head, Indigenous and Children's Group,

Yours sincerely

Andrew Kettle  
Acting Director (CEO)  
Australian Institute of Health and Welfare

25 May 2016



## Introduction

The Australian Institute of Health and Welfare (AIHW) is the national agency set up to provide information and statistics on Australia's health and welfare. It is a statutory authority accountable to the Australian Parliament, and is governed by a management Board. AIHW's work informs debate and decisions on policy and services. We have a strong commitment to providing independent and objective information and advice in all our work.

The AIHW has a long history in providing data, information and reporting on early childhood education and childcare. This information has been provided in a series of dedicated publications covering areas such as services and trends in child care; data development and reporting indicator frameworks (AIHW: Moyle et al 1996; AIHW: Moyle et al 1997; AIHW 2002, 2004, 2006, 2009b, 2011b, 2012 and AIHW: NCSIMG 2007).

The AIHW's biennial flagship publication, *Australia's Welfare* (AIHW 2001, 2003, 2005, 2007a, 2009a, 2011a, 2013, 2015a) consistently reports on areas of relevance including children, childcare, preschool attendance, the transition to primary school and the early identification of developmental vulnerability, school attendance, performance in reading, writing and numeracy, pathways through education and training.

*Australia's Welfare 2015* notes improving educational outcomes starts with good early childhood development, effective parenting and strategies to ensure children are ready for school, and that it is quality early childhood education which is critical in providing young children with broader opportunities in preparation for later schooling (AIHW 2015a). Infants, children and young people (aged 0–24) made up about a third (32%) of the Australian population as at 30 June 2012 (AIHW 2013). They form a distinct group within the population, with particular health and social needs that require access to a range of services. What happens in the early years of a child's life is critical, and this period provides the foundation for future health, development and wellbeing of the individual. It also shapes the future health and productivity of the whole population.

Education promotes skills and knowledge that can help an individual understand information and seek services to improve their health, while financial benefits may include access to better housing and well-resourced communities. Higher education has also been linked to increased social capital, social networks, and community participation. Health, in turn, has been linked back to educational and employment opportunities (AIHW 2011a). Increasing participation in higher education for under-represented groups has been a goal of both the Australian Government and Australian universities.

Due to its role in reporting on welfare and its past experience in conducting a comprehensive review in this space, AIHW can play a key role in contributing to the compilation of a national evidence base on education and early childhood education and will have an ongoing role in contributing to the creation of a national evidence base.

## Background

Improving educational outcomes for Australians is a high priority for all levels of Australian Government. Learning plays a central role in developmental transitions through life from infancy through early childhood to adolescence. Quality early childhood education is critical in providing young children with broader opportunities for continued development and preparation for later schooling. In primary school children are supported to develop both personal and foundational academic skills that are critical to leading a productive and engaged life. Poor engagement with school, low school attainment and lack of community participation and connections are symptomatic of disadvantage and social exclusion. As



children grow older and move into secondary school, remaining in and engaged with school is central to making the successful transition to further study and engaged employment, which in turn bring additional benefits for health, social and emotional wellbeing of the Australian population and improved living standards overall.

A national education evidence base is needed to improve education outcomes, measure performance and progress, and to allow the exploration of what determinants affect education outcomes across the Australian population. It is also needed to inform policy makers and programme developers about which specific factors affect future development and the relative importance of risk and protective factors. A solid evidence base will help determine which factors and populations to target in policies and programmes, and when to adjust them, to maximise the Australian Governments' return on investment.

The desirable characteristics (AIHW 2014a) of a national education evidence base include:

- the capacity to provide longitudinal data to monitor characteristics, circumstances and trends over time
- coverage throughout the life course following children from birth to the early and later years of schooling, and into employment
- utilisation of existing jurisdictional administrative data sets, as well as relevant Commonwealth data, to understand transition points and factors that influence these transitions
- the ability to make meaningful comparisons of the impacts of particular policies and programs within and between states and territories
- large numbers of population groups that will permit robust analyses of their outcomes (such as Indigenous children or those with a disability)
- open, universal and transparent access (not differential access) to support research activities throughout Australia that all agencies, jurisdictions and researchers could potentially use
- enhanced access to a range data sets that would meet current and emerging research needs.

Some of the research and policy questions which a national education evidence base could answer include:

- What is the relationship between the time spent in formal preschool and/or child care, and the child's early schooling outcomes
- Do vulnerable children have better outcomes at school if they attend an early childhood education program? How does the influence of early childhood education programs vary by for example the number of days attended, the type of service or where the child lives
- What are the most important individual, familial, contextual, and policy factors that lead to better developmental and educational outcomes for children?
- Are these the same factors for specific vulnerable groups such as Indigenous children?
- Do children who move between states have different developmental and education outcomes to children who don't?

The AIHW has been a key integral contributor to developing the national education evidence base despite having no access to the data within education data collections. Through various high level education related committees, the AIHW has aligned its work program to Government strategies such as the Early Childhood Development strategy to build better



information and a solid evidence base (COAG 2009), and the National Information Agreement for Early Childhood Education and Care (NIA ECEC) that describes the partnership between state and territory governments and government information agencies to develop the information base.

## **A National Evidence Base for Education**

The early childhood period is a particularly critical time for children's development. Currently, there is no single administrative collection or combination of collections that are able to provide national data on the impact of early factors, and types of care and learning experiences on children's developmental outcomes. However in 2012, the AIHW attempted to create a single linked data set of ongoing information on children's health and education from birth to approximately 15 years of age (AIHW 2014a).

At the request of the Early Childhood Data Subgroup, a subcommittee of the Australian Education, Early Childhood and Youth Affairs Systems Officials Committee (AEEYSOC) (SCSEEC 2014) and as a component under the NIA ECEC work plan, the AIHW was commissioned to develop an enduring and linked national early childhood development researchable data set spanning 15 years of life from birth to high school. It was intended to foster research in early childhood development, across health, human services and early childhood education and care and to provide an evidence base on early childhood development in Australia. For each child, it would have contained information on health, development, school readiness, early childhood education and care, school attendance and educational achievements. A data set such as the NECD RDS would have had the potential to strengthen the evidence base for child development, from which sound policies and programs could be developed (AIHW 2014).

The current status of this project is that it is on hold. AIHW was negotiating agreements with each state and territory, and as such, AIHW has been awaiting further resources from the Australian Government to gain approval to procure and link data, including seeking relevant approval from state and territory ethics committees. Some organisations had indicated difficulties in providing data, but expressed support for the NECD RDS (see further Challenges in the development of a linked data set)

### **Data gaps that could be addressed by a national evidence base**

- AIHW's review of the purpose, scope and reporting status of 6 national frameworks, 4 National Agreements and 5 National Partnership Agreements relevant to children and youth, found that the Agreements are service-sector specific, with the potential to be streamlined, cohesive and coordinated across different policy areas (AIHW 2014b)
- There are limited consistent and comparable data on the actual attendance rates at preschool programs, compounded by various jurisdictional definitions on the year before full time schooling (AIHW 2015a)
- More work needs to be done to evaluate the effectiveness of preschool program and participating in programs for vulnerable and at risk children (AIHW 2015a)
- There is little information on the unmet demand for child care, including reasons for being inaccessible, the duration of time that parents have been waiting to access child care, and areas where additional care is required (AIHW 2015a)
- Linking 2009 data from the Australian Early Development Census (AEDC) to Growing Up in Australia: The Longitudinal Study of Australian Children (LSAC) to

provide long term outcomes of early development vulnerabilities, and then looking for early intervention to evaluate their effectiveness on the outcomes (AIHW 2015a)

- Throughout the AIHW National Youth Information Framework project <http://www.aihw.gov.au/nyif/>, which examined identified priority areas for young people aged 12–24, there was a consistent paucity of information during the middle years of childhood which is contrasted by rich data from the early childhood years.
- Improved comparability of school attendance data across jurisdictions and sectors (Government vs. independent and Catholic) (AIHW 2015a)
- Introduce measures of social aspect of learning (social isolation, bullying) to complement national assessment of student performance (AIHW 2015a)
- Year 12 school retention rates from the ABS National School Statistics Collection (NSSC) are aggregated and an individual student's rate cannot be tracked from Year 7/8 to Year 12 (AIHW 2015a)
- Youth participation data in education and training are only available from the annual ABS Survey of Education and Work and reliable estimates by Indigenous status and for smaller geographical areas are not available (AIHW 2015a)
- There is considerable policy interest in the young people who are not in education, employment or training (NEET), which was 10% of 15–24 year olds in 2014. More information is required to explore the determinants of this disengaged cohort (AIHW 2015a)
- Education plays a critical role in the transition to independence of youth as it sets the scene for employment and income to sustain an independent lifestyle from parental financial support. Regular point in time data are available on key milestones but the data from multiple data sources cannot be drawn together to provide the overall picture of complex pathways (AIHW 2015a)
- Frameworks to elucidate pathways to higher school attainment should include exposure to quality early childhood and care programs (AIHW 2014c)

### **Challenges in the development of a linked data set**

The AIHW encountered significant challenges to establish this linked data set including the multiplicity of ethics committees and data custodians approvals processes, the complexities of retaining data over a long period of time, privacy and legislative constraints and determining how to make data available to external researchers.

Table 1 below summarises the challenges encountered which can be broadly covered by 2 categories of issues: data access/availability, data governance

#### **Data access and availability issues**

While negotiating with jurisdictional data custodians for the supply and provision of preschool data to the NECD RDS, it became apparent that some jurisdictions were not in the position to provide these data because consent had not been granted by the parents/guardians to provide the information to a third party. The use and provision of the Statistical Linkage Key 581 (SLK-581) is a potential solution to overcoming the disclosure of identifying information as it can be used as a pointer to link the majority of records without requiring the provision of full name and date of birth.



For some jurisdictions in some years, not all jurisdictions collected data related to each individual child (unit record data). The result of missing unit record data is the cohort of children is not definable or linkable.

### Data governance issues

There were a number of other data linkage projects being developed by jurisdictions and these competed with the NECD RDS by reducing the potential pool of jurisdictions that were willing to pilot the project – a nationally coordinated approach would have been more efficient. The AIHW encountered different processes to approve the release of data within the same jurisdiction and across different sectors.

The enduring ongoing concept of the NECD RDS caused concern for some jurisdictional data custodians who were focussed on the conditions of data release such as the opportunity for data owners to review research findings prior to publication. Some data custodians expressed concern about the resources required to provide data to the AIHW on an ongoing basis.

Table 1. Summary of challenges encountered during development of the NECD RDS (A

Short term	Medium term	Long term
Access to education (preschool) data—privacy issues	Access to NECD RDS—how will researchers access data and who will be involved in the project approval process	Ongoing provision of data—conditions for release of data; resources required to supply data on an ongoing basis
Ongoing nature of NECD RDS—data custodian concerns	Other linked data sets and national data linkage strategies—the role of the NECD RDS compared with other linkage projects	
Jurisdictional linkage experience—less experienced have more concerns about the project	Incomplete data—data not collected at the unit record level (URL); data not collected for all children (for example, non-government preschools in some jurisdictions)	
Access to Commonwealth and jurisdictional datasets—difficulties in obtaining permission		

## Application of data linkage to address gaps in national education data sets

Children and young people may come into contact with a range of education and welfare services throughout their childhood and early adolescence. As such, it is important to know the relationships between use of various welfare services, and between educational outcomes and use of welfare services. This can help to gauge the effect of welfare-related events during these developmental stages and assist in developing effective interventions. By using data linkage, different pathways can be analysed and critical points for intervention determined. Data linkage is a powerful tool for identifying multiple occurrences of individuals within a data set and for linking information across data sets.

Data linkage is a practicable method to address data gaps in education and training data collections. Data linkage works as a powerful tool for identifying multiple appearances of individuals and for linking their information across data sets. This allows datasets, which collect different information about the same individual to be brought together in a secure

and appropriately managed way. Where feasible and appropriate, data linkage can reduce data provider and respondent burden and maximise efficiency of data collection.

The AIHW has reported on a preliminary assessment on the availability of data items suitable for the linkage of person-level data sets that are available for the different education and training sectors (AIHW 2015). Prior to undertaking data linkage, a number of issues need to be considered including privacy and legislative issues such as ethics approval requirements, data custodian approvals, receipt and storage of data and agreement on publications of analysis resulting from the linked data. Access to the linked data for external researchers is another consideration for some data linkage projects. These issues need to be considered when obtaining data from multiple sources at the national and jurisdictional levels for the purpose of linkage, and can take considerable time to navigate and resolve (for further details, see AIHW 2014a). These other issues that affect linkage projects were considered briefly, excluding legislative frameworks that may affect linkage protocols and data dissemination. Further information on the linkage of Commonwealth data for statistical and research purposes is available from the National Statistical Service website (National Statistical Service 2015).

In 2011, the AIHW published results on the academic performance of children on guardianship/custody orders from 2003 to 2006. The analysis data set was obtained by linking data on children on orders with education department-based school reading and numeracy testing results. This pilot project involved interdepartmental linkage of administrative data across multiple jurisdictions. The study found that a considerable proportion of children on guardianship/custody orders were not meeting national benchmarks for reading and numeracy (AIHW 2011d).

In 2015, the AIHW published the results of linking data from the Child Protection NMDS and National Assessment Program (NAPLAN) testing to analyse the educational outcomes of children on protection orders. The study documented further evidence that children in care are an academically disadvantaged group with the study population having had much lower NMS achievement rates than all students in Australia (AIHW 2015e).

## **Privacy protection**

The protection of the privacy of individuals is very important when linking data sets. There are several aspects to consider throughout a data linkage project to preserve privacy and confidentiality, including legislative and policy frameworks, governance arrangements, any necessary approvals by human research ethics committees, use of identifying and analysis variables, managing risks around dissemination of data, de-identification of personal information, when if/when it is no longer required and data archiving/destruction.

The privacy regime in Australia is complex, particularly where the data supplied involve multiple jurisdictions. The Australian Privacy Principles (APPs) in the Privacy Act 1988 (the Privacy Act) establish requirements for commonwealth agencies and organisations when dealing with personal information. Additionally, many commonwealth agencies are subject to other legislation, policies and established procedures covering aspects of how data related to their functions may be collected, stored, used and/or disclosed.

For example, as well as complying with its obligations under the Privacy Act, the AIHW is also subject to requirements under the Australian Institute of Health and Welfare Act 1987 (the AIHW Act). The confidentiality provisions in s. 29 of the AIHW Act apply to information obtained and/or held by the AIHW 'concerning another person'. The definition of 'person' under s. 29 of the AIHW Act is broader than that in the Privacy Act as it includes, for example, bodies or associations of persons whether incorporated or not, bodies politic and deceased persons.



To further complicate the data linkage landscape, provision of data by states and territories must be compliant with relevant state and territory privacy legislation and any other legislation relevant to the particular data involved.

For each data linkage activity, each of the applicable legislative and policy considerations must be addressed as applicable to the particular dataset(s) and data custodian(s) involved. Nonetheless, they do not present insurmountable obstacles to sharing data. In fact, as well as presenting requirements and prohibitions, such legislative and policy regimes acknowledge the value of research and often establish usable principles for when this can appropriately occur.

### **Data Linkage at AIHW**

The AIHW is an accredited Commonwealth Integrating Authority with a strong record and capacity for data linkage. The operation of the Data Integration Services Centre provides infrastructure and supports governance for the AIHW to deliver an accessible service facilitating cost effective health research. The centre maintains AIHW's standing as an accredited Integrating Authority by ensuring compliance with the newer and more stringent security and governance arrangements required of agencies wishing to undertake data linkage involving Commonwealth data where the project is classified as high risk. The centre also manages AIHW's membership of the Population Health Research Network.

The AIHW undertakes a wide range of data linkage work for researchers, both internal and external to the AIHW. This work supports a variety of innovative analyses about the health and welfare of Australians, such as longitudinal analysis and movements between health and welfare services. This work thereby acts to increase the value of individual data sets.

Current data linkage work includes

- Data linkage to produce non-duplicated client counts for National Healthcare Agreement (NHA) Performance Indicator #17: Treatment rates for mental illness.
- Finalisation of Study Roll for Military and Veteran Research to support the joint research program of the Department of Defence and DVA.
- Data linkage to examine relationships between different community services including child protection and youth justice, and alcohol and other drug services and the Specialist Homelessness Services Collection.
- Data linkage to extend the Pathways in Aged Care database another 3 years to 2013-14 (depending on receipt external funding).
- Data integration projects on children in out-of-home care with the National Assessment Program – Literacy and Numeracy (NAPLAN) and on pathways in aged care.
- Data linkage of 3 national cancer screening programs to enable analysis of screening behaviour and the outcomes for screening and non-screening individuals.

Compiling a comprehensive data resource as part of a national evidence base for school and early childhood education involves data sharing activities and linking data sources currently held by several data custodians. Data sharing and access arrangements have progressed greatly in recent times supported by initiatives such as the Commonwealth's public data policy statement. Further discussion of data sharing, availability and use will be forthcoming in a submission to the upcoming Productivity Commission inquiry into data availability and use.

### **Data Integration Involving Education Collections**

The AIHW has published an assessment of the data items suitable for the linkage of education and training data sets (AIHW 2015b). Many of the education collections assessed

by AIHW for linkage have either given and family name information or the data necessary to construct a non-identifying linkage key, examples of which include the SLK-581.

Consequently, it is expected that many of the data collections could be linked to provide data sets for statistical analysis. However, the staff and provider National ECEC Workforce Census collections have no data suitable for linking and so are unable to be linked either to each other or to other collections. Also, the NSSC is primarily an aggregate data collection; however, continued engagement with stakeholders may lead to an increased quantity of data being provided at the unit record level for government schools in the future. Among the student-level collections, those carried out for international comparisons (PISA, TIMSS and PIRLS) have no name data, which limits linkage possibilities for these collections.

Apart from name data, a number of collections have person-level identifiers that may be useful when linking within-sector data collections. In particular, student identifier (ID) could be such a possible candidate for the collections covering school students (although the consistency of a student's ID across schools, sectors and over time needs to be determined). 32 Development of a national data standards strategy and implementation plan Within the higher education and VET sectors, respectively, CHESSN (Commonwealth Higher Education Student Support Number, note that this is not available for all students) and USI (unique student identifier, introduced for all students undertaking nationally accredited training from 1 January 2015) may be useful for linking across years.

### **Data consistency**

The consistency with which linkage variables are reported across the data sets affects how accurately linkage processes can match records for the same person across collections. Inconsistencies can result from simple reporting or processing errors (for example, in date of birth and sex). However, some variables can be expected to change over time. Three areas that have been identified as likely to impact on data linkage between education and training collections include:

- change of residential address
- consistency of reported name
- stability of person identifiers.

### **Barriers to data sharing and linkage**

International (e.g. New Zealand's Integrated Data Infrastructure) and Commonwealth (e.g. The Australian Bureau of Statistic's Multi-Agency Data Integration Project) initiatives have shown there are rapidly decreasing technological impediments to sharing data and bringing together a large-scale evidence base sourced from multiple data custodians. These examples show the technical ability to bring together data but have not addressed issues relating to fragmented data sources split across multiple jurisdictions.

Despite this increasingly accessible infrastructure and repeated recommendations to increase data sharing across the commonwealth (e.g. Management Advisory Committee Report on Connecting Government: Whole of Government Responses to Australia's Priority Challenges. 2004, Australian Government Information Interoperability Framework 2006, National Government Information Sharing Strategy 2009) the level of Commonwealth data sharing today is generally below the level required to appropriately harness the value of Commonwealth data holdings. This is recognised in the recent *Guidance on Data Sharing for Australian Government Entities* (PM&C 2016) which found that it is now increasingly

*'...important that Australian Government entities streamline data sharing processes to enable greater efficiencies and improve decision making for policy and implementation processes.'*



Another consideration in data sharing is the complexity of the legislation. This and the conservative way in which the legislation has been interpreted have led to a perception that legislation is a key barrier to information sharing. This is acknowledged in the National Government Information Sharing Strategy (2009)

*‘The complexity of privacy laws often results in the default response to requests for information (that might be considered sensitive) as: “We cannot share our information because of privacy laws.” This response is often given instead of determining (through the appropriate channels) whether the information can, in fact, be shared.’*

This can be viewed in direct contrast to more recent advice from the OAIC (e.g. Pilgrim 2016) and the Victorian Government CIO council’s (2013) information management statement on sharing personal data between government agencies

*‘In principle, privacy should not be viewed as an inhibitor to the government’s ability to improving service delivery based upon appropriate data sharing arrangements.’*

Overall, where data can be appropriately shared under legislation this has not been occurring regularly enough and AIHW’s ability to access key education datasets has been limited. Data linkage procedures and clear protocols for sharing data are being established, under enduring linkage key and enduring dataset arrangements, within accredited integrating authorities such as The ABS and The AIHW. These approaches are being trialled to make data sharing more efficient and useable.

## **Data Sharing Infrastructure**

In recent years, Australian governments have made substantial investments in building data linkage infrastructure (including establishing the Population Health Research Network– a major facilitator and proponent of data linkage) resulting in the establishment of robust data linkage models that ensure the safety, privacy and security of data used in integration projects. This infrastructure includes:

- state and territory linkage nodes – the Centre for Health Record Linkage (CHeReL, NSW/ ACT), the Queensland Centre for Health Data Services (Health LinQ, Qld), SA/NT DataLink, the Tasmanian Data Linkage Unit (TDLU, Tas), Victorian Data Linkages (VDL, Vic), and the Western Australian Data Linkage Branch (WADLB, WA).
- the three current accredited Integrating Authorities (IAs) established under the Commonwealth Governance and Institutional Arrangements for Statistical Data Integration involving Commonwealth Data, are the AIHW, the Australian Institute of Family Studies and the Australian Bureau of Statistics.

Demand for data linkage services is increasing. The AIHW undertook 38 data linkage projects mostly on behalf of the medical research community during 2014-2015 and we expect to undertake over 60 projects during 2015-2016.

In 2014, the DET commissioned AIHW to link the Department’s Child Care Management System (CCMS) with the Australian Early Development Census data set (AEDC) to look at proportional differences in children’s school readiness based on their differential exposure to early childhood services. The objectives were to investigate the link between intensity (i.e. duration, length, quality) of exposure to early childhood education and care (ECEC) services and children’s school readiness; investigate the roles of different ECEC services in buffering the negative effects of low/high intensity exposure to ECEC services on children’s school readiness; and to quantify the extent to which children’s school readiness varies by the differential exposure to ECEC services.

## Data Governance

In support of data sharing infrastructure and initiatives, data governance arrangements for data sharing are becoming more streamlined. Alongside recent guidance on data sharing activities for Australian Government Entities published by the Department of Prime Minister and Cabinet in April 2016 a simplified committee structure has been established to discuss data issues across Commonwealth agencies. AIHW is currently a member of the Deputy Secretaries Data Group, DSDG, (reporting to the Secretaries Data Group) and also has representation in the Data Champions network. Groups such as the DSDG are available to consider cross-agency data issues that will impact on the availability and use of data, such as in the education sphere.

Within the education field, the AIHW is engaged as an observer on the Early Childhood Data Sub Group (jurisdictional custodians of NECEC data). In addition AIHW is actively engaged in the National Indigenous Reform Agreement Performance Information Management Group a, sub-committee of the COAG Working Group on Indigenous Reform (WGIR), and the Early Childhood Education and Care Working Group of the Review of Government Service Provision.

## AIHW's role in Bringing Together the Education Evidence Base

AIHW has a central role in reporting on early childhood education and welfare and has demonstrated expertise in analysing the impact of education on welfare outcomes. AIHW also has had a role in bringing together education data from a number of sources to fulfil its reporting responsibilities and due to this expertise and experience, AIHW has published a report on the development of national data standards strategy that has already considered many of the issues to be faced as part of a national education evidence base.

The following sub-sections describe work that AIHW has already undertaken in the education space.

### Early Childhood Education

Early educational intervention has been shown to have a substantial short-term and long term effect on cognition, social and emotional development, school progress, antisocial behaviour and even crime. Both Australian and international studies have shown that children's literacy and numeracy skills at age 4–5 are a good predictor of academic achievement in primary school. As a result, policies and programs that focus on the early years can only enhance educational outcomes for children (AIHW 2015c).

Since 2009, under the National Information Agreement on Early Childhood Education and Care (NIA ECEC), the AIHW has managed the development of National Minimum Data Set Specification (NMDS) standards for the National Early Childhood Education and Care Collection (NECEC), which underpins the Collection and the annual ABS publication *Preschool Education, Australia* (ABS 2015). The ECEC NMDS ensures the common reporting through the continued development and implementation of national uniform data standards and classifications that provide consistency within a collection and allow for data to be integrated across collections.

The National Partnership Agreement on Universal Access to Early Childhood Education – 2016 and 2017 (NP UAECE – 2016 and 2017) supports Universal Access to and improved participation by children in quality early childhood education in the year before full-time school, with a focus on vulnerable and disadvantaged children (COAG 2016). The



Agreement covers service delivery from 1 January 2016 to 31 December 2017. Under this NPUAECE, the AIHW in conjunction with the Australian Bureau of Statistics (ABS) and Australian Government Department of Education and Training (DET), and with input from the Early Childhood Data Sub Group have developed four performance indicators (PIs) to inform the measurement of achievement of the objectives and outcomes in the Agreement (AIHW2014b):

1. The proportion of early childhood education programs delivered by a qualified early childhood teacher
2. The proportion of children enrolled in the year before full-time school in quality early childhood education program(s)
3. The proportion of enrolled children, enrolled in the year before full-time school, in quality early childhood education program(s) for 600 hours per year
4. The proportion of enrolled children who attend, in the year before full-time school, quality early childhood education program(s) for 600 hours per year.

These performance indicators are reported to the Early Childhood Education and Care Working Group of the Review of Government Service Provision, and to the National Indigenous Reform Agreement Performance Information Management Group.

## **The Review of Consistency of Education and Training data and the Development of a National Education Data Standards Strategy**

In May 2015 the AIHW published a report which summarised a comprehensive review of the consistency and alignment of data items between education and training data collections and with existing national data standards. The commissioned work was conducted to inform priorities for the development a national data standards strategy and implementation plan to enhance the comparability, quality and coherence of information across the Australian education and training sectors, including early childhood education, school education, vocational education and training (VET) and higher education. The data collections and data items were identified by the committee overseeing this work, the Strategic Cross-sectoral Data Committee. The focus of this work was on administrative collections and censuses with an education and training focus. The scope of the strategy extended to the development and implementation of national data standards for a core set of 53 data items across 15 national education and training data collections. The following 14 data collections were reviewed

1. Australian Early Development Census (AEDC)
2. Census of Population and Housing
3. Higher Education Statistics Collection Australian Government
4. National Apprenticeship and Traineeship Collection
5. National Assessment Program (NAP)
6. National Early Childhood Education and Care Collection
7. National Early Education and Care Workforce Census
8. National Schools Attendance Collection
9. National Schools Statistics Collection (NSSC)
10. Programme for International Student Assessment (PISA)
11. Progress in International Reading Literacy Study (PIRLS)
12. Trends in International Mathematics and Science Study (TIMSS)
13. National VET Provider Collection
14. National VET in Schools

The core data items across the 5 different categories (socio-demographic, education, disability and health, family and data linkage) were assessed for consistency with national data standards in METeOR, the AIHW metadata online registry. Metadata for the in-scope education and training data collections was compared to nationally endorsed data standards within the health, housing, community services and early childhood sectors, to determine the consistency of definitions and coding options between the data collections and with national standards. These national standards in METeOR were used to provide a single comparator for each data item, so that all education and training data standards were compared with the same standard. It is recognised that data items from education and training data collections that are not collected consistently with the national standards used in this comparison are still collected to agreed standards within the specific data collection or education and training sector (for example, within the school or VET sector).

Fifty-three data items were assessed for each of the data collections included in the mapping exercise. This resulted in a total of 583 data items that were mapped and assessed for consistency against national standards, where available. An effort indicator was then applied to classify the level of effort needed to align data items with national standards.

#### **Overall:**

- 29% (139) of data items were fully consistent with national data standards. No further effort was required for these data items to be consistent with existing standards.
- Some effort would be required to improve the consistency of 25% (119) of data items that are derivable or mappable to standards.
- 5% (24) of data items were not consistent with national data standards and considerable effort would be required to align these data items with existing national standards.
- The largest proportion of data items (41% or 197) includes items that were considered to be relevant but do not exist in the collection, are unable to be determined due to a lack of information, or are collected but a national standard does not exist. This group of data items would also require considerable effort to ensure comparability.
- 104 data items were graded as not applicable. These data items are excluded from the per cent calculations in this section.

#### **For education data items:**

- 25% of items were fully consistent with national standards.
- 19% were derivable or mappable.
- 28% of items were assessed as potentially relevant to the data collection but not currently collected, most commonly concurrent and previous educational institution data items.
- 19% of data items do not currently have an existing national standard in METeOR; for example, attendance or enrolment status and educational institution type.

## **Frameworks and indicator based reporting**

In recent years, there has been an increase in the number of indicators and reporting frameworks that report on the health and wellbeing of children and young people, in Australia. In 2013, the AIHW reviewed and reported on the purpose, scope and reporting status of 6 national frameworks, 4 Council of Australian Governments (COAG) National Agreements and 5 COAG National Partnership Agreements (the Agreements) relevant to children and/or youth (AIHW 2014b). Three of these frameworks relate to national education: the National Education Agreement, the National Partnership Agreement on



Universal Access to Early Childhood Education, and the National Partnership Agreement on Youth Attainment and Transitions. Data collected under these agreements have been used to provide information for reporting on (Deloitte 2015):

- Australian Government funded Indigenous and remote early childhood policies;
- Progress towards Closing the Gap targets on Indigenous Early Childhood Education;
- Enrolments for the Productivity Commission's Report on Government Services (RoGS) and Overcoming Indigenous Disadvantage; and
- Participation for international reporting to the OECD and UNESCO.

In terms of reporting against frameworks, the AIHW is responsible for reporting against the:

- *Key National Indicators of Child Health, Development and Wellbeing*, a framework consisting of 56 indicators covering topics such as health status and outcomes, risk and protective factors that can influence health and wellbeing, early learning and education, family and community environments, safety and security and system performance.
- *Headline Indicators for Children's Health, Development and Wellbeing*, a core set of 19 indicators in the areas of health, early education and care, and family and community designed to focus policy attention on identified priority areas for children aged 0–12.
- *National Framework for Protecting Australia's Children 2009–2020* is Australia's first long-term plan to promote and enhance the safety and wellbeing of Australia's children.

The AIHW has also been responsible for the development of the *Early Childhood Development Outcomes Framework*, consisting of 20 indicators for the Early Childhood Development Strategy.

The indicators from these reporting frameworks with the greatest relevance to this submission include: attendance at early childhood education programs, quality of early childhood education and care services, accessibility of early childhood education and care services, home-based early learning, transition to primary school, school attendance and school engagement. A focus of AIHW reporting is on groups of children, including Indigenous children, children from culturally and linguistically diverse backgrounds and children living in remote or disadvantaged areas (AIHW 2011a, 2011b, 2012).

The AIHW also plays a significant role in the analysis and subsequent dissemination of frameworks, data and information for public policy, public reporting, research and to inform community debate. In recent years the Institute has made increasing use of technological opportunities to collect, analyse, validate, link and report on health and welfare data. Some recent examples which include preschool and Australian Early Development Census data included in the AIHW's Children's Headline Indicators (<http://www.aihw.gov.au/chi/>), and the National Framework for Protecting Australia's Children 2009–2020 (<http://www.aihw.gov.au/child-protection/data/>)

## **Attendance at ECEC and developmental outcomes**

In 2015, the AIHW conducted a review of published literature at the request of the Department of Education and Training and the Department of Social Services to examine the impact of quality and quantity of ECEC on Australian children (AIHW 2015c). The relationship between exposure to ECEC both in terms of length of time attending (in months) and intensity of exposure (in terms of hours attended per week) on school readiness and developmental outcomes was considered.

The effect of attendance at ECEC on children from socially disadvantaged backgrounds, Indigenous children, and children from non-English speaking backgrounds was investigated. These specific groups were identified for inclusion because the AEDC (and its precursor, the AEDI) indicates their vulnerability as does the volume of studies and published literature that examined these groups in particular.

### **Quality of ECEC**

The review found that this is the most comprehensively researched element of the 3 aspects, with very strong support for the notion that positive outcomes relate most directly to the quality of ECEC. There is little reliable evidence on the relative contribution that each component of quality makes to a child's developmental outcomes.

### **Intensity of ECEC**

There is less research on this topic, and so fewer definitive conclusions can be drawn on the amount of weekly hours a child spends in ECEC, particularly in the preschool environment. This remains a topic suited for further study, cognisant that quality, intensity and duration are all linked by complex relationships and are not independent factors.

### **Duration of ECEC**

The limited literature on the length of time spent in ECEC suggests that the optimum period in the preschool environment (aged 3) would be part time, spread across 2 years, rather than full time in a single year. Research on the optimum age at which a child commences ECEC, typically in the 0–3 bracket, is mixed and is a suitable subject for further research.

## **Preschool Affordability**

The AIHW was funded by jurisdictional officials responsible for early childhood to undertake a project that investigates the predictors of use of preschool and long day care. The project originated from the discussions and measurement for Performance Indicator 4 in the NP ECE, which is intended to measure whether cost is a barrier to children attending preschool by measuring the out of pocket cost to parents. The looked at issues around the measurement and reporting for Performance Indicator 4 and attempted to identify via logistic regression modelling factors that predict preschool participation.

Five national datasets were analysed to identify factors that predict preschool participation:

- Childhood Education and Care Survey, 2008 (CEaCS)
- Household Income and Labour Dynamics in Australia, Wave 8 (HILDA)
- Longitudinal Study of Australian Children, Wave 3 (LSAC)
- Survey of Income and Housing, 2007-08 (SIH)
- Census of Population and Housing, 2006 (Census)

The preliminary findings indicated that free or low cost availability of preschools encourages participation of children and that targeted social marketing on the benefits of preschool increases participation in preschool, particularly for disadvantaged and non-English speaking families. The results of the regression analysis indicate that there is a clear positive relationship between preschool participation and the socio-economic status of the family, however, the relationship between children who are disadvantaged and preschool participation is still unclear. Further work could be done to establish if there is a negative relationship between children in groups of particular disadvantage and their levels of preschool participation and potential drivers of participation for these groups.



## **Towards a performance measurement framework for equity in higher education**

Higher education has benefits at both an individual and national level. Evidence suggests that higher education boosts an individual's employment prospects, earnings, status and personal development, and people with higher-level qualifications are less likely to be unemployed (AIHW 2011a).

In March 2008, a *Review of Australian higher education* (the Review) was commissioned by the Australian Government (Bradley 2008). The Review examined the future direction of the higher education sector, its fitness for meeting the needs of the Australian community and the options for reform. The outcome of the Review predicted a shortfall in the number of tertiary-qualified Australians able to meet workforce demands in the medium to long-term future which could become a serious economic issue for Australia. The review recommended that due to this shortfall, the government should seek to capitalise on the abilities of all Australians to gain a higher education qualification.

In addition to the focus on overall levels of higher education attainment, the Review also highlighted that despite Australia's mass higher education system, significant inequities persisted in terms of participation rates and educational outcomes for disadvantaged social groups, which required greater government intervention.

In 2013, the Australian Government commissioned the AIHW to develop a potential measurement framework for equity, focusing on domestic undergraduates (AIHW 2014c) to address the gap that there was no existing framework for measuring progress towards, and achievement of, equity outcomes for Indigenous Australians, those from low socioeconomic status (low SES) areas, or people who live in regional and remote areas. A set of 61 indicators was created which was organised into 3 tiers: 23 for educational attainment and outcomes, 9 for precursors of higher educational attainment, and 29 for education system performance. An important finding from this work was the inclusion of quality early childhood and care in the framework for higher education attainment.

## **Indigenous specific work related to early childhood development**

Improving the health outcomes of Australian children is a high priority for all levels of government in Australia, and research shows that the early childhood period (from birth to around age 8 years) is a particularly critical time for children's development. This is recognised by the Council of Australian Governments' *Investing in the Early Years—A National Early Childhood Development Strategy* (Commonwealth of Australia 2009).

The Closing the Gap Clearinghouse is an online collection of research and evaluation evidence on what works to overcome Indigenous disadvantage in seven critical areas or building blocks. Action in these areas supports the Council of Australian Governments (COAG) closing the gap targets. The resources of the Clearinghouse are designed to ensure that evidence-based resources are readily available to support the needs of Commonwealth, state and territory government policy makers, the agencies and services they fund, and the wider community. The Clearinghouse is a COAG initiative jointly funded by all Australian governments. It is being delivered by the Australian Institute of Health and Welfare in collaboration with the Australian Institute of Family Studies.

The Clearinghouse has developed two issue papers relating to early childhood development: 'Review of early childhood parenting, education and health intervention programs for Indigenous children and families in Australia' (AIHW 2013) and 'Improving the early life

outcomes of Indigenous children: implementing early childhood development at the local level' (released December 2013).

These papers find significant gaps between Indigenous and non-Indigenous outcomes in early learning that contribute to lifelong disadvantage across health, educational achievement and wellbeing.

### **School attendance and retention of Indigenous Australian students**

Engagement or participation in education is a key factor affecting the life chances of all Australians, and it is particularly important for Indigenous Australians who have an overall lower level of participation in education than non-Indigenous Australians. Higher levels of educational attainment improve employment opportunities, are associated with higher income and promote participation in all societal activities. Education includes preschool education, primary and high school education, tertiary education and vocational training, as well as education and training outside a formal institutional framework.

The Clearinghouse developed a paper to highlight the issues in analysing Indigenous and non-Indigenous school attendance and retention; the gap in school attendance and retention and the causes of this gap; and the success or otherwise of the various programs and initiatives and strategies designed to improve school attendance (Purdie 2010).

### **The National Education Evidence Base**

As highlighted in this submission there are substantial gains from compiling a national evidence base for school and early childhood education. A wide ranging review, completed by AIHW, has highlighted much of the underlying infrastructure required to bring together much of this evidence base. As much of this infrastructure is already available, one of the key steps in creating this evidence base would be managing the information flows appropriately to bring together securely available, relevant data for the education evidence base. Agencies such as the AIHW have extensive experience in developing infrastructure and expertise for securely and appropriately handling data sourced from multiple data custodians which is directly relevant to the challenges of compiling a national education evidence base.

In summary AIHW is uniquely placed to advise on the appropriate handling of education data assets, with

- experience in education data standards and maintaining the data standards for the National Early Childhood and Care Collection
- extensive data handling experience and resources
- a cohesive data governance framework
- an internal ethics committee to enable and monitor appropriate use of data
- access to a wide variety of data hosting and confidentialisation infrastructure flexible enough to meet a variety of stakeholder and researcher needs
- one of only 3 accredited integrating authorities, audited to have infrastructure and skills to handle high risk data assets at the level of international best practice
- enabling legislation that allows AIHW to make data resources available in the most flexible manner possible, given appropriate constraints for privacy and use of the data.



## References

- ABS 2009. Childhood education and care, Australia, June 2008. Cat. no. 4402.0. Canberra: ABS.
- ABS 2012. Childhood education and care, Australia, June 2011. ABS Cat. No. 4402.0. Canberra: ACT.
- ABS 2013. Australian Demographic Statistics, Jun 2013 viewed 17 January 2014.  
<<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3101.0Jun%202013?OpenDocument>>
- ABS 2015. Preschool Education  
<<http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4240.0Main+Features12015?OpenDocument>>
- AIHW 2001. Australia's welfare 2001. Australia's welfare no. 5. Cat. no. AUS 24. Canberra: AIHW.
- AIHW 2002. Trends in long day care services for Australian children, 1991-99. AIHW Cat. No. CFS 5. Canberra: Australian Institute of Health and Welfare.
- AIHW 2003. Australia's welfare 2003. Australia's welfare no. 6. ABS cat. no. 8905.0. AIHW cat. no. AUS 41. Canberra: AIHW.
- AIHW 2004. Counting Kids: Developing a new national collection for child care and preschool services. Bulletin No. 22. AIHW Cat. No. AUS 55. Canberra: Australian Institute of Health and Welfare.
- AIHW 2005. Australia's welfare 2005. Australia's welfare no. 7. Cat. no. AUS 65. Canberra: AIHW.
- AIHW 2006. Trends in the affordability of child care services 1991-2004. Bulletin No. 35. AIHW Cat. No. AUS 71. Canberra: Australian Institute of Health and Welfare.
- AIHW 2007a. Australia's welfare 2007. Australia's welfare no. 8. Cat. no. AUS 93. Canberra: AIHW.
- AIHW 2007b. Final report on the development of the Children's Services National Minimum Data Set. Cat. no. CFS 6. Canberra: AIHW.
- AIHW 2008. Key national indicators of children's health, development and wellbeing: indicator framework for 'A picture of Australia's children 2009'. Cat. no. AUS 100. Canberra: AIHW.
- AIHW 2009a. Australia's welfare 2009. Australia's welfare no. 9. Cat. no. AUS 117. Canberra: AIHW.
- AIHW 2009b. A picture of Australia's children 2009. Cat. No. PHE 112. Canberra: Australian Institute of Health and Welfare.
- AIHW 2010. Children and young people at risk: Educational worksheet (Australia's welfare 2009). Canberra: AIHW.
- AIHW 2011a. Australia's welfare 2011. Australia's welfare no. 10. Cat. no. AUS 142. Canberra: AIHW.
- AIHW 2011b. Headline indicators for children's health, development and wellbeing 2011. Cat. no. PHE 144. Canberra: AIHW.
- AIHW 2011c. National outcome measure for early childhood development: development of an indicator-based reporting framework. Cat. No. PHE 134. Canberra: Australian Institute of Health and Welfare.

AIHW 2011d. Educational outcomes of children on guardianship or custody orders: a pilot study, Stage 2. Child welfare series no. 49. Cat. no. CWS 37. Canberra: AIHW

AIHW 2012. A picture of Australia's children 2012. Cat. No. PHW 167. Canberra: Australian Institute of Health and Welfare.

AIHW 2013. Australia's welfare 2013. Australia's welfare no. 11. Cat. no. AUS 174. Canberra: AIHW.

AIHW 2014a. Developing the National Early Childhood Development Researchable Data Set. Cat. no. PHE 179. Canberra: AIHW.

AIHW 2014b. Mapping of children and youth indicator reporting frameworks. Cat. no. CWS 48. Canberra: AIHW.

AIHW 2014c. Towards a performance measurement framework for equity in higher education. Cat. no. IHW 129. Canberra: AIHW.

AIHW 2015a. Australia's welfare 2015. Australia's welfare no. 12. Cat. no. AUS 189. Canberra: AIHW.

AIHW 2015b. Development of a national education and training data standards strategy and implementation plan. Cat. no. EDU 04. Canberra: AIHW

AIHW 2015c. Literature review of the impact of early childhood education and care on learning and development. Cat. no. CWS 53. Canberra: AIHW.

AIHW 2015d. The health of Australia's prisoners 2015. Cat. no. PHE 207. Canberra: AIHW.

AIHW 2015e. Educational outcomes for children in care: linking 2013 child protection and NAPLAN data. Cat. no. CWS 54. Canberra: AIHW

Australian Government Information Interoperability Framework 2006

Bowes J & Grace R 2014. Review of early childhood parenting, education and health intervention programs for Indigenous children and families in Australia. Issues paper no. 8. Produced for the Closing the Gap Clearinghouse. Canberra: Australian Institute of Health and Welfare & Melbourne: Australian Institute of Family Studies.

Bradley D, Noonan P, Nugent H & Scales B 2008. Review of Australian higher education: final report. Canberra: DEEWR

COAG (Council of Australian Governments) 2016. National Partnership Agreement on Universal Access to Early Childhood Education—2016 and 2017. Canberra: COAG.

Department of the Prime Minister and Cabinet 2016. Guidance on Data Sharing for Australian Government Entities. <<https://www.dpmc.gov.au/resource-centre/public-data/guidance-data-sharing-australian-government-entities>>

Department of the Prime Minister and Cabinet 2015. Australian Government Public Data Policy Statement. <[https://www.dpmc.gov.au/sites/default/files/publications/aust\\_govt\\_public\\_data\\_policy\\_statement\\_1.pdf](https://www.dpmc.gov.au/sites/default/files/publications/aust_govt_public_data_policy_statement_1.pdf)>

Deloitte Access Economics 2015. Review of the National Early Childhood Education and Care Collection. Australian Government Department of Education. <[https://docs.education.gov.au/system/files/doc/other/dae-department\\_of\\_education\\_ecec\\_collection\\_review\\_final\\_07-09-2015\\_2.pdf](https://docs.education.gov.au/system/files/doc/other/dae-department_of_education_ecec_collection_review_final_07-09-2015_2.pdf)>

Holman, C.D., Bass, A.J., Rosman, D.L., Smith, M.B., Semmens, J.B., Glasson, E.J., Brook, E.L., Trutwein, B., Rouse, I.L., Watson, C.R., de Klerk, N.H., Stanley, F.J. 2008, 'A decade of data



linkage in Western Australia: strategic design, applications and benefits of the WA data linkage system', *Australian Health Review*, 32, 4, pp. 766-777.

Management Advisory Committee Report on Connecting Government: Whole of Government Responses to Australia's Priority Challenges. 2004

Moyle H, Meyer P, Golley L and Evans A. 1996. *Children's Services in Australia, 1996: Services for children under school age*. Canberra: Australian Institute of Health and Welfare.

Moyle H, Meyer P, and Evans A. 1997. *Outside school hours care services in Australia 1996*. AIHW Cat No. CFS 2. Canberra: Australian Institute of Health and Welfare.

National Government Information Sharing Strategy 2009

NCSIMG (National Community Services Information Management Group) Children's Services Data Working Group 2007. *Final report on the development of the Children's Services National Minimum Data Set*. Cat. No. CFS 6. Canberra: Australian Institute of Health and Welfare.

Productivity Commission 2013. *Childcare and Early Childhood Learning: Productivity Commission Issues Paper*. Canberra. December 2013.

Pilgrim T 2016. Privacy, Data and De-identification. < <https://www.oaic.gov.au/media-and-speeches/speeches/privacy-data-de-identification>>

Purdie N & Buckley S 2010. *School attendance and retention of Indigenous Australian students*. Issues paper no. 1. Produced for the Closing the Gap Clearinghouse. Canberra: Australian Institute of Health and Welfare & Melbourne: Australian Institute of Family Studies.

Standing Council on School Education and Early Childhood (SCSEEC) 2014. *Terms of Reference for the Early Childhood Data Subgroup*. < [http://scseec.edu.au/site/DefaultSite/filesystem/documents/Reports%20and%20publications/Archive%20Publications/Early%20Childhood%20Education%20and%20Care/ECDSG\\_amended\\_TOR\\_as\\_agreed\\_by\\_all\\_Parties\\_effective\\_15\\_Dec\\_2010.pdf](http://scseec.edu.au/site/DefaultSite/filesystem/documents/Reports%20and%20publications/Archive%20Publications/Early%20Childhood%20Education%20and%20Care/ECDSG_amended_TOR_as_agreed_by_all_Parties_effective_15_Dec_2010.pdf)>

Sims M 2011. *Early childhood and education services for Indigenous children prior to starting school*. Produced for the Closing the Gap Clearinghouse. Canberra: Australian Institute of Health and Welfare and Melbourne: Australian Institute of Family Studies.

Trutwein, B., Holman, C.D.J., Rosman, D. 2006, 'Health Data Linkage Conserves Privacy in a Research-Rich Environment', *Annals of Epidemiology*, 16, 4, pp. 279-280