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The South Australian Early Childhood Health and Development Project

The Early Childhood Health and Development (ECHD) Project is a collaboration of 29 currently approved researchers from universities and government departments in South Australia, and several data custodians representing the South Australian Department of Health, Consumer and Business Services, the Women's and Children's Health Network, the Department for Education and Child Development, and the Australian Government Department of Education in Canberra.

The primary goal of this first report is to disseminate the work to date, to all data custodians to highlight the value and opportunity the linked de-identified data presents to the investigation of experiences and conditions that contribute to child health and development at a population level. We hope each data custodian can see how their individual data holdings have contributed to the much larger and richer linked data set. In this case, the whole is much more than the sum of the individual parts.

Introduction

The ECHD project commenced in 2009 with the objective of linking administrative data for the cohort of children born in South Australia (SA) from 1999 to 2011, to explore the effects of early life conditions and experiences on child development, health and learning. Phase 1 covers the birth years from 1999 to 2005, and Phase 2 will extend the birth cohort and corresponding data for children in South Australia born until the end of 2011. We expect to have that data by end 2014. This report covers Phase 1 for children born 1999 to 2005.

The ECHD Project has involved linking 12 government administrative datasets using Master Linkage Keys provided by SA NT Datalink. This has created a highly enriched data source and the unique opportunity to inform and improve policy and service delivery, to benefit the children, families and communities of SA. This success can largely be attributed to the positive relationships built between researchers and individual data custodians, who together, have worked through extensive approvals, ethics and data acquisition processes. We all continue to work to build South Australia's data linkage capacity.

Project background

Ensuring children's optimal health and development is important for their ability to benefit from learning opportunities, academic achievement at school, and for their future health, social and economic capability.[1,2] The United Nations Convention on the Rights of the Child states that every child has the right to develop a strong platform for optimal health and development during their early

As part of the *BetterStart* Research Series this report describes the various data sets within this project and aims to highlight the opportunity the linked data present to investigating and improving child health and development.

The *BetterStart* Child Health and Development Research Group is a group of inter-disciplinary researchers from epidemiology, public health, nutrition, paediatrics, biostatistics, and psychology who are trying to better understand how to ensure infants and children have the best start in life that will enhance their health and development over the life course.

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Art by Elinor, age 5

years, to ensure they have the best chance of reaching their potential.[3] The challenge is to ensure this right is delivered for every child in SA despite social and economic barriers they may face.

Acquisition of physical, social, emotional and cognitive capacities between birth and age eight occurs at a rate which exceeds that during any other stage of life.[4] This age range also captures developmental milestones and key social transitions such as entry into childcare, preschool and school. Recognition that human wellbeing, health, cognitive skills and social competence underpins economic development[5] has helped drive the argument for investment in early childhood, as trajectories of later life outcomes are strongly influenced by early experiences.[6] Ensuring that all children have the best start in life is a priority in national[7] and state[8] policies.

The use of linked de-identified administrative data provides opportunities for examining a broad range of child health and development outcomes that align with those selected in national priorities as key performance indicators. The research proposed for the ECHD project allows a whole-of-population lens to focus on the whole child, across physical health, social, emotional, cultural, cognitive and learning dimensions from before birth to adolescence.

The aims of the ECHD project currently include:

- Investigate the consequences of pregnancy complications, and poor outcomes at birth on child health, vulnerability at school entry, and school achievement;
- Investigate the patterning and consequences of social, economic and demographic disadvantage on vulnerability at school entry, and transitions to school achievement;
- Describe the epidemiology of hospital emergency presentations and potentially preventable hospitalisations (PPHs) for children. Improve understanding about the relationship between key perinatal and sociodemographic factors, and hospital emergency presentations and PPHs;
- Develop data-driven risk prediction models to inform more accurate identification of families whose children are at high risk of poor health and development, and who may benefit from intensive family support programs;
- Assess the long term functional outcomes of traumatic brain injury in relation to school readiness and achievement;
- Examine the associations between dental health and vulnerability at school entry, and achievement in literacy and numeracy tests; and
- Utilise knowledge gained from the aims above to obtain a better understanding of the social and health origins of poor academic achievement in school.

The ultimate goal of this research is to inform better service delivery across the government and non-government sectors that support the health and development of children.

Funding support

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- NHMRC Partnership Project Grant (APP1056888).

As well as direct contributions from:

- South Australian Department of Health;
- South Australian Department for Education and Child Development; and
- Australian Research Alliance for Children & Youth (ARACY).

Ethics

Gaining initial ethics approval for both the data linkage and research on the linked data was an extensive process that took more than two years. It is now a continuing process of engagement with various ethics committees around the state, regularly updating them on progress and research objectives. Ethics approval has been granted from the South Australian Department of Health Human Research Ethics Committee (HREC) (377/06/2013; HREC/13/SAH/106), the University of Adelaide HREC (H-185-2011), the Aboriginal Health Research Ethics Committee (04-11-405; 04-13-538), the Women's and Children's Hospital Research Ethics Committee (REC2411/9/14) and the Flinders University HREC (5504).

The linkage process

SA NT DataLink is an unincorporated collaborative joint venture involving partners from all South Australian Universities, the South Australian Health and Medical Research Institute, the South Australian Department of Health, the Department for Education and Child Development, the Department for Communities and Social Inclusion, the Motor Accident Commission, The Cancer Council SA – Beat Cancer Project and the Northern Territory Government.

The role of SA NT DataLink is to support research, policy development and planning by providing a de-identified data linkage service. Its privacy protection policies have been endorsed by the SA Privacy Commission.

After progressing through an application process with SA NT DataLink, reaching agreement with data providers and custodians and obtaining ethics approval, data custodians provide the requested data to SA NT DataLink with a local record ID and key identifying variables. This information is used with the Master Linkage File by SA NT DataLink to probabilistically match the identifying information available in multiple datasets. Once matched, a project specific ID is generated and data custodians use this and their local record ID to link back to their detailed data, remove identifying information and deliver the de-identified data to the researchers with requested variables and the Project Specific Linkage Key that is really just a random ID specific to that research project. For a more detailed explanation of the linkage process please see https://www.santdatalink.org.au/ or view an explanatory video from SA NT DataLink found: http://www.youtube.com/v/vLYGcbxrIPA&hl=en_US&feature=player_embedded&version=3

As unique identification numbers (i.e. for health care cards) are not used in Australia, linkages are necessarily probabilistic and are based on key demographic information and therefore a small degree of error is to be expected. Linkage error can occur from missed links or incorrect positive links.[9] Although calculation of false linkages has not been undertaken in SA to date, Western Australia and New South Wales use similar systems and estimate false positive linkage error of approximately 0.1%[10] and 0.3%,[11] respectively.

Data validation

The ECHD Project team has engaged in extensive data validation and checking, involving close collaboration with custodians. Once we receive the de-identified data from the data custodian, a process of validation is commenced. Initial validation checks involve exploration of individual datasets to check that:

- data items correspond to the original approved requests;
- there is no unexplained missing or additional data;
- no duplicates exist within and between datasets;
- project-specific linkage keys match across different datasets; and
- prevalence estimates from key data items are comparable to existing publicly available reports (i.e. SA Health Pregnancy Outcomes reports, ABS reports). In cases where there are no publicly available reports, published research manuscripts utilising the same data have been used as the comparison reference.

The data validation process is ongoing and will continue to involve consultation with data custodians to ensure the highest level of validity is achieved before any research is conducted using the information.

Data access

The ECHD project has been ethically approved and built as a resource to assist our Government and research collaborators to use the data in new and better ways. At the same time, the ECHD project aims to address questions of relevance to advancing the science of early childhood health and development. All researchers with access to the linked data have entered into a SA NT DataLink and SA Health Deed of Confidentiality and been approved by the SA Health HREC.

Consistent with our ethics approvals, work is currently in progress to provide secure data access to approved researchers via a secure online platform provided by eResearch SA. Further information regarding this will be forthcoming.

Data description

The data currently linked by the ECHD Project includes multiple datasets such as Births, the Perinatal Statistics Collection, the Integrated South Australian Activity Collection (ISAAC), the Emergency Department Data Collection (EDDC), Child Health Record, Pathways to Parenting, School Enrolment Census, Running Records (literacy tests), English as a Second Language (ESL) Scope and Scales, the National Assessment Program Literacy and Numeracy (NAPLAN), the Australian Early Development Census (AEDC) and the South Australian Titanium Dental data.

The ECHD researchers have combined the Births and Perinatal datasets to create the 'Born Population File' as the best estimate of births in South Australia from 1999 to 2005. This forms the 'backbone' of any data analysis as it represents our best estimate of the total birth cohort for SA for each year. Thus, it is the basic population denominator for all analyses.

The following section explores the basic characteristics of each dataset. Please see Table 14 for an illustration of which datasets are available for specific birth years and age ranges.

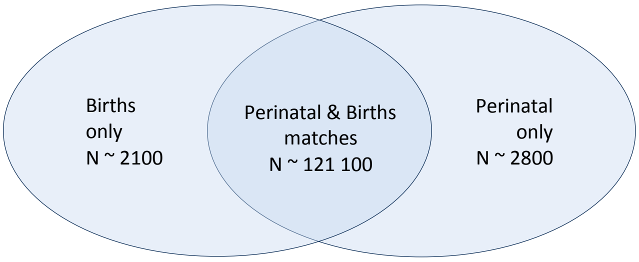
Please note that all figures provided in this report are rounded estimates of the N available in a particular dataset. Once any two datasets are merged, these Ns obviously change. The estimates presented here represent the number of individuals within a specific dataset, as opposed to number of records. For example, one individual may have 10 records of hospitalisations in the ISAAC dataset but will only be counted as one individual. Indeed this is one of the key advantages of linked data – it turns episodes of care into individual experiences. Specific sample sizes will vary depending on datasets and variables linked for specific birth cohort years. In addition, although the terms parental and maternal are used throughout this report, this may also refer to primary caregiver(s) where appropriate.

BORN POPULATION FILE

A synthetic dataset compiled by the ECHD Project Group

The ECHD project team has merged the Births and Perinatal datasets to create what is known as the 'Born Population'. As it is possible that some births are missed in the Births registration or Perinatal data collection process, matching these two data sets has created the most accurate representation of all children born in South Australia between 1999 and 2005. Figure 1 depicts the matches and mismatches between the two datasets.

Figure 1. *Perinatal dataset and Births dataset merged*



This dataset serves as the core dataset for linkage to every other data set that is a part of the ECHD project as a significant amount of work has been undertaken to verify and establish this file as the most reliable source of demographic characteristics. In addition to this, as data is collected by different agencies it has been necessary to develop standard formats for common data items that may originally have been coded differently (i.e. suburb format).

As with any data linkage process, there are numerous sources of error that may lead to inconsistencies for similar variables between datasets such as reporting, recording, data-entry, data-management error and missed or false positive linkages. Extensive checks have been undertaken to create a set of what is referred to as 'common variables' that have been verified and deemed reliable based on information from multiple datasets. The core common variables include mother and child date of birth, child sex, infant plurality, birth order, birth weight, mother's age and postcode at time of birth as well as Aboriginal or Torres Strait Islander status. The ECHD team has invested significant time into creating these variables and they are our 'best estimate' of the correct data. In every case we have explicit rules for creating these variables that are available to any researcher so they can judge whether they want to use our recommended variables or create their own version.

This data checking and cleaning process has involved assessing consistency of variables between datasets and developing decision rules to establish these common variables. For example, consultation with the Aboriginal Health Council of South Australia has resulted in a set of decision rules that uses information from both the Birth and Perinatal data for Aboriginal or Torres Strait Islander status. Inconsistencies for other variables such as sex or gender have also been resolved through the development of decision rules based on best linkage practice. Therefore, the Born Population file contains the most accurate and reliable estimate of the core common variables.

Data

The ECHD group recommend that the core characteristics developed in the Born Population File serve as the denominator for linkage to all other datasets, as the validity and reliability of these characteristics has been verified as well as we are able to do that. However, the Born Population file contains information only on children born in SA, other datasets also contain information on children not included in this core dataset. For instance, there could be a hospitalisation for a child who is in SA on holiday from another jurisdiction but was not born in SA.

Table 1: *Connectivity between the Born Population (n=121,100) and all other datasets*

Data	***N***
Births	121,100
Perinatal	121,000
Path. to Parenting	900
Child health record	83,000
AEDC	14,000
Running Records	24,000
NAPLAN	32,000
Titanium	69,000
ISAAC	54,500
EDDC	65,000
School enrolment	53,000
ESL Scope & Scales	6,000

Note: All numbers provided are rounded, indicative estimates only.

BIRTHS DATA COLLECTION
Custodian: Consumer and Business Services, South Australian Government

The Births data is collected as a part of the Births, Deaths and Marriages registry. All births (alive or stillborn) are legally required to be registered within 60 days of birth. Deaths that occur after 20 weeks gestation or >400 grams are also recorded in the Births Register. Variables include mother, father and child demographics and basic clinical birth data.

This data is key to examining the relationship between birth outcomes, disadvantage at birth and health and development.

Data

Registered Births data is currently available for all children born from 1999 to 2005. A total of ~N=123,200 registered births were recorded in SA for the birth cohort born from 1999 to 2005.

Table 2: *Connectivity between the Births data (n=123,200) and all other datasets*

Data	***N***
Perinatal	121,000
Born Population	121,100
Pathways to Parenting	900
Child health record	83,500
AEDC	14,500
Running Records	24,000
NAPLAN	32,500
Titanium	70,000
ISAAC	55,000
EDDC	65,500
School enrolment	53,500
ESL Scope & Scales	6,000

Note: All numbers provided are rounded, indicative estimates only.

PERINATAL STATISTICS COLLECTION
Custodian: South Australian Department of Health

The South Australian Perinatal Statistics Collection is a collection of information sourced from the Supplementary Birth Record completed by midwives and neonatal nurses after hospital and home births. Data is collected on all births in SA, including women who normally live interstate. Specific information on children includes gestation at birth, gender, birth weight and APGAR scores at one and five minutes. Further information includes maternal age; gestational health; parity; marital status; ethnicity; postcode and smoking status. Parental occupation is also collected.

The range of factors included in the perinatal data allows examination of some maternal factors and perinatal exposures as predictors of child health and development.

Data

South Australian perinatal data is currently available for children born from 1999 to 2005. A total of ~N=123,900 individual births are represented in the Perinatal Statistics collection from 1999 to 2005.

Table 3: *Connectivity between the Perinatal data (n=123,900) and all other datasets*

Data	***N***
Births	121,000
Born Population	121,100
Pathways to Parenting	900
Child health record	83,000
AEDC	14,500
Running Records	24,000
NAPLAN	32,500
Titanium	70,000
ISAAC	55,500
EDDC	65,500
School enrolment	53,500
ESL Scope & Scales	6,500

Note: All numbers provided are rounded, indicative estimates only.

PATHWAYS TO PARENTING QUESTIONNAIRE

Custodian: Women's and Children's Health Network, South Australian Department of Health

The Pathways to Parenting questionnaire was a tool used by Child and Family Health (CaFHS) nurses undertaking the Universal Contact Visit following the birth of a baby, to identify families in need of additional support and determine eligibility for the Family Home Visiting Program. Information is available on the mother's pregnancy, education, housing status, access to social support, mental health, substance use and gambling issues, history of child protection issues with the child of concern and during their own childhood.

This data provides information on important health, social and maternal factors that may affect child health and development.

Data

Data from the Pathways to Parenting questionnaire is currently available from 2005 to 2006 corresponding to children born in 2005. A total of ~N=1,200 individuals exist in the Pathways to Parenting dataset for 2005 to 2006.

Table 4: *Connectivity between Pathways to Parenting (n=1,200) and all other datasets*

Data	*N*
Births	900
Perinatal	900
Born Population	900
Child health record	1,100
AEDC	NA
Running Records	NA
NAPLAN	NA
Titanium	400
ISAAC	600
EDDC	800
School enrolment	NA
ESL Scope & Scales	NA

Note: All numbers provided are rounded, indicative estimates only.

CHILD HEALTH RECORD

Custodian: Women's and Children's Health Network, South Australian Department of Health

The Child Health and Development Record commonly known in SA as "the blue book", is given to parents to record information about the child between birth and six years of age. Important developmental milestones are recorded at birth and various ages up to 4 years for segments of the population accessing CaFHS services. Information may be available regarding child demographics, growth, feeding, oral health, medical and health issues as well as the health check date. Additionally, Body Mass Index, visual acuity, audiometry and development level are available for the preschool health check (approximately 4 years of age).

The Child Health Record provides information that can be used to investigate healthy development and predictors of school readiness and achievement.

Data

Child Health Record data is currently available from 1999 to 2009 corresponding to the birth cohort born from 1999 to 2005. A total of ~N=86,000 individuals have Child Health Record data for the Universal Contact Visit and ~N=74,000 individuals are represented in the preschool health check.

Table 5: *Connectivity between the Child Health Record (n=86,000) and all other datasets*

Data	*N*
Births	83,500
Perinatal	83,000
Born Population	83,000
Pathways to Parenting	1,100
AEDC	11,500
Running Records	16,500
NAPLAN	20,000
Titanium	49,000
ISAAC	38,500
EDDC	47,500
School enrolment	36,000
ESL Scope & Scales	4000

Note: Numbers provided reflect individuals represented in the Universal Contact Visit only and are rounded, indicative estimates only.

AUSTRALIAN EARLY DEVELOPMENT CENSUS
Custodian: Australian Government Department of Education

The Australian Early Development Census (AEDC) is funded by the federal government and implemented across Australia once every three years (www.aedc.gov.au). This national data collection was first implemented in 2009 and involved teachers completing the Australian Early Development Index (AEDI) questionnaire for over 261,000 students in their first year of school. The AEDI includes 95 questions that assess the following domains: physical health and wellbeing; social competence; emotional maturity; language and cognitive skills; and communication skills and general knowledge. Data items available include child demographics, class type, terms attended, special needs, language, school absences, Socio-Economic Indexes for Areas (SEIFA), individual question responses as well as domain, sub-domain scores and indicators of vulnerability. Analyses focus on factors associated with vulnerability and how AEDC predicts future child health and school achievement.

Data

AEDC data is currently available for 2009 and corresponds with children born from 2003 to 2004. A total of ~N=17,500 individuals are represented in the 2009 AEDC data.

Table 6: *Connectivity between AEDC (n=17,500) and all other datasets*

Data	*N*
Births	14,500
Perinatal	14,500
Born population	14,000
Pathways to Parenting	NA
Child health record	11,500
Running Records	6500
NAPLAN	NA
Titanium	8500
ISAAC	7500
EDDC	9500
School enrolment	10,000
ESL Scope & Scales	1000

Note: All numbers provided are rounded, indicative estimates only.

RUNNING RECORDS
Custodian: Department for Education and Child Development

Running Records are a tool used to assess oral reading of continuous text in order to observe student's strengths, weaknesses and development in reading proficiency. The assessment is delivered by Teachers to students in Year 1 and 2. Statewide data is collected twice a year from one optional and one compulsory assessment period. Data available includes date of assessment, text level and accuracy rate.

Running Records provide information about child development and achievement in reading which can be conceptualised as an outcome or a predictor of later school achievement.

Data

Running Records data are currently available from 2008 to 2010 corresponding to the birth cohort born from 2002 to 2004 for Year 1 tests and from 2001 to 2003 for Year 2 tests. A total of ~N=29,000 individuals are in the Running Records dataset for the birth cohort from 2001 to 2004.

Table 7: *Connectivity between Running Records data (n=29,000) and all other datasets*

Data	***N***
Births	24,000
Perinatal	24,000
Born Population	24,000
Pathways to Parenting	NA
Child health record	16,500
AEDC	6500
NAPLAN	14,000
Titanium	20,500
ISAAC	14,000
EDDC	15,000
School enrolment	29,000
ESL Scope & Scales	4500

Note: All numbers provided are rounded, indicative estimates only.

NATIONAL ASSESSMENT PROGRAM – LITERACY AND NUMERACY (NAPLAN)
Custodian: Department for Education and Child Development

The NAPLAN is a national assessment of Australian students in literacy and numeracy during Years 3, 5, 7 and 9 at school, undertaken annually since 2008. Child development is assessed across four domains of reading, writing, language (grammar and punctuation) and numeracy. Specific information in this dataset is currently available for tests undertaken by students in Year 3 and 5 including student demographics, school location and index of educational disadvantage. General test results by domain as well as achievement against proficiency bands and the national minimum standard are also included.

NAPLAN data provides key indicators of school achievement.

Data

NAPLAN records for Year 3 assessments are currently available for 2008 to 2010, corresponding to birth cohort years of 2000 to 2002. Records for Year 5 assessments are currently available for 2009 and 2010 corresponding with the birth cohort years of 1999 and 2000. A total of ~N=40,500 individuals are represented in the NAPLAN data.

Table 8: *Connectivity between the NAPLAN data (n=40,500) and all other datasets*

Data	***N***
Births	32,500
Perinatal	32,500
Born Population	32,000
Pathways to Parenting	NA
Child health record	20,000
AEDC	NA
Running Records	14,000
Titanium	31,000
ISAAC	17,000
EDDC	19,000
School enrolment	40,500
ESL Scope & Scales	7000

Note: All numbers provided are rounded, indicative estimates only.

TITANIUM DENTAL PATIENT INFORMATION MANAGEMENT SYSTEM

Custodian: South Australian Dental Service, South Australian Department of Health

Titanium is a data collection containing administrative and clinical dental records collected by the South Australian Dental Service for the purpose of monitoring and reporting on publicly funded dental services. This includes patients seen under the School Dental Service. Records are collected and maintained independently at individual SA Dental Service clinic sites. Available data items include child demographics, site and service information, risk, Decayed Missing Filled (DMF) and Community Periodontal Index (CPI) scores as well as clinical indicators of the health of deciduous and permanent teeth.

Dental health will be examined both as an outcome of social, clinical and health factors and as a contributing factor to school readiness and achievement.

Data

Dental records data are currently available for 2000 to 2010, corresponding to the birth cohort born from 1999 to 2005. A total of ~N=88,500 individuals are represented in Titanium for the 2000 to 2010 period.

Table 9: *Connectivity between Titanium data (n=88,500) and all other datasets*

Data	***N***
Births	69,000
Perinatal	70,000
Born Population	70,000
Pathways to Parenting	400
Child health record	49,000
AEDC	8500
Running Records	20,500
NAPLAN	31,000
ISAAC	38,000
EDDC	44,000
School enrolment	48,000
ESL Scope & Scales	7500

Note: All numbers provided are rounded, indicative estimates only.

INTEGRATED SOUTH AUSTRALIAN ACTIVITY COLLECTION (ISAAC)

Custodian: South Australian Department of Health

ISAAC is a data collection system recording information on all admitted patients from public hospitals in SA since the 1st of July, 2001. Data are routinely recorded by hospital staff and updated at the time of separation i.e. discharge, transfer or death. The data is processed via a variety of mediums including paper, electronic records and email. Specific information is available for hospital location, child demographics, admission time and category, activity when injured, place of occurrence, diagnoses (ICD codes) and other clinical indicators, length of stay and nature of separation.

Along with the EDDC, the ISAAC provides hospitalisation event information.

Data

ISAAC records are currently available from the 1st of July 2001 to the 30th of June, 2011 which is inclusive of records for the birth cohort born from 1999 to 2005. A total of ~N=73,000 individuals are represented in the ISAAC data from 2001 to 2011.

Table 10: *Connectivity between the ISAAC data (n=73,000) and all other datasets*

Data	***N***
Births	55,000
Perinatal	55,500
Born Population	54,500
Pathways to Parenting	600
Child health record	38,500
AEDC	7500
Running Records	14,000
NAPLAN	17,000
Titanium	38,000
EDDC	42,500
School enrolment	29,500
ESL Scope & Scales	4000

Note: All numbers provided are rounded, indicative estimates only.

SOUTH AUSTRALIAN EMERGENCY DEPARTMENT DATA COLLECTION (EDDC)

Custodian: South Australian Department of Health

The EDDC details emergency department presentations for all major metropolitan public hospitals in SA. Data is currently available for linkage from 1st July, 2003 and includes only physical presentations. Telehealth consultations are not in scope. The aim of the data collection is to demonstrate performance and patterns in presentations to aid service planning and funding. Data items include child demographics, presentation and departure information and clinical indicators.

The EDDC provides emergency hospitalisation event information.

Data

EDDC data is currently available from the 1st of July, 2003 up until the 30th of June, 2011 corresponding to the birth cohort born from 1999 to 2005. A total of ~N=85,500 individuals are represented in the EDDC data for the eight year period.

Table 11: *Connectivity between the EDDC data (n=85,500) and all other datasets*

Data	***N***
Births	65,500
Perinatal	65,500
Born Population	65,000
Pathways to Parenting	800
Child health record	47,500
AEDC	9500
Running Records	15,000
NAPLAN	19,000
Titanium	44,000
ISAAC	42,500
School enrolment	34,000
ESL Scope & Scales	6000

Note: All numbers provided are rounded, indicative estimates only.

SOUTH AUSTRALIAN SCHOOL ENROLMENT CENSUS

Custodian: Department for Education and Child Development

The School Enrolment Census collects data on students enrolled and attending government schools in SA. A census is undertaken in Term 1 and Term 3 each year and creates a snapshot of enrolment information to assist in reporting and monitoring. Information collected includes child and parental demographics including parental education level and occupation, main language spoken at home and country of birth. Additionally, information regarding reasons for leaving the school (if relevant), school absences and behaviour management incidents are recorded.

The School Enrolment Census information allows investigation of child and parental factors that may serve as predictors of future health and development.

Data

School Enrolment data is currently available from 2005 to 2010, corresponding to the birth cohort born from 1999 to 2005. A total of ~N=68,500 individuals exist in the School Enrolment data from 2005 to 2010, applications are in process to obtain 2004 data.

Table 12: *Connectivity between the School Enrolment data (n=68,500) and all other datasets*

Data	***N***
Births	53,500
Perinatal	53,500
Born Population	53,000
Path. to Parenting	NA
Child health record	36,000
AEDC	10,000
Running Records	29,000
NAPLAN	40,500
Titanium	48,000
ISAAC	29,500
EDDC	34,000
ESL Scope & Scales	11,500

Note: All numbers provided are rounded, indicative estimates only.

ENGLISH AS A SECOND LANGUAGE (ESL) SCOPE AND SCALES

Custodian: Department for Education and Child Development

ESL Scope and Scales is a tool that supports targeted teaching, assessment and reporting of the development of ESL learners. Dependent on performance across written, oral and multimodal English pieces, a child is assigned a Scale level. Scales correspond to a standard which is based on the level of English required to achieve South Australian Curriculum Standards at different Year levels. The Scale and standard correspondence describes the level of control of the English language and highlights students who need targeted ESL support i.e. if they are operating below their Year level. Data items available include child demographic information, the date the ESL Scope and Scales was completed and the ESL Scale achieved.

The ESL data provides an indicator of school achievement and child development.

Data

ESL Scope and Scales data is currently available from 2006 to 2010 for the cohort born from 1999 to 2005. A total of ~N=11,500 individuals are represented in the ESL Scopes and Scales.

Table 13: *Connectivity between the ESL data (n=11,500) and all other datasets*

Data	***N***
Births	6500
Perinatal	6500
Born Population	6000
Path. to Parenting	NA
Child health record	4000
AEDC	1000
Running Records	4500
NAPLAN	7000
Titanium	7500
ISAAC	4000
EDDC	6000
School enrolment	11,500

Note: All numbers provided are rounded, indicative estimates only.

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Table 13: *A description of data currently available for age ranges^ within birth year for the cohort born from the 1st of January, 1999 to the 31st of December, 2005*

Dataset (Years data available)	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Births (1999-2005)	*Birth*	*Birth*	*Birth*	*Birth*	*Birth*	*Birth*	*Birth*
Perinatal (1999-2005)	*Birth*	*Birth*	*Birth*	*Birth*	*Birth*	*Birth*	*Birth*
Born Population (1999-2005)	*Birth*	*Birth*	*Birth*	*Birth*	*Birth*	*Birth*	*Birth*
Pathways to Parenting (2005-2006)	-	-	-	-	-	-	*~4 weeks*
Child Health Record (1999-2009)	*0 to 4*	*0 to 4*	*0 to 4*	*0 to 4*	*0 to 4*	*0 to 4*	*0 to 4*
AEDC (2009)	-	-	-	-	*~5 ½*	*~5 ½*	-
Year 1 Running Records (2008-2010)	-	-	-	*~6*	*~6*	*~6*	-
Year 2 Running Records (2008-2010)	-	-	*~7*	*~7*	*~7*	-	-
Year 3 NAPLAN (2008-2010)	-	*~8*	*~8*	*~8*	-	-	-
Year 5 NAPLAN (2009-2010)	*~10*	*~10*	-	-	-	-	-
Titanium Dental (2000-2010)	*1 to 11*	*0 to 10*	*0 to 9*	*0 to 8*	*0 to 7*	*0 to 6*	*0 to 5*
ISAAC Hospitalisations (01/07/2001-31/06/2011)	*2 to 12*	*1 to 11*	*0 to 10*	*0 to 9*	*0 to 8*	*0 to 7*	*0 to 6*
EDDC Emergency Dept. (01/07/2003-30/06/2011)	*4 to 12*	*3 to 11*	*2 to 10*	*1 to 9*	*0 to 8*	*0 to 7*	*0 to 6*
School Enrolment Census (2005-2010)	*5 to 11*	*6 to 10*	*5 to 9*	*5 to 8*	*5 to 7*	*5 to 6*	*~5*
ESL Scope and Scales (2006-2010)	*6 to 11*	*6 to 10*	*5 to 9*	*5 to 8*	*5 to 7*	*5 to 6*	*~5*

^Age is indicative only. Age will vary dependent on date of birth and date of data collection. For example, the mean age for the AEDC is ~5 ½ while the majority of the AEDC falls within a range from 5 to 7 years of age.