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ALBERTA CENTRE FOR  
CHILD, FAMILY & COMMUNITY  
RESEARCH

# *Experiences of Albertan Youth*

## *Technical Report*

Child and Youth Data Laboratory



**CYDL** Link Analyze Inform

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### **Suggested citation**

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## PROJECT BACKGROUND

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### **THE CYDL INITIATIVE**

The Child and Youth Data Laboratory (CYDL) analyzes and interprets linked administrative data from child- and youth-serving ministries in the Government of Alberta. The data are linked across ministries, at the level of the individual child or youth.

CYDL's research projects provide groundbreaking opportunities to understand relationships between many of the factors critical to children's and youth's lives, in broad-use areas such as health and education as well as more specialized services such as justice system contact or receipt of income support. The research results make unique contributions to the knowledge base on the well-being of children and youth, and can be used to support integrated policy development and coordinated program services.

The CYDL is managed by the Alberta Centre for Child, Family and Community Research (ACCFRCR). The Centre has evolved over its eight year history as a public-sector, innovative resource for evidence. The Centre develops, supports and integrates research across sectors and disciplines to provide a strong, evidence-based foundation for identifying and promoting effective public policy and service delivery to improve the well-being of children, families, and communities in Alberta, Canada, and internationally.

CYDL research projects are governed by a number of committees, three working groups, the Hub and the Lab itself. Descriptions of the roles of the various groups are in Appendix I.

## **PROJECT DESCRIPTION**

The current project, *Experiences of Albertan Youth 2008/09*, is a snapshot of the experiences of Albertan youth (12 to 24 years old) in 2008/09. It describes the characteristics and service use patterns of the population with a focus on mental health, educational achievement, and socio-economic status. A series of short reports on policy-relevant topics has been produced (e.g., *Mental health status of Albertan youth*, *Albertan youth receiving intervention services for maltreatment*, *Albertan youth charged with an offence*, *A profile of post-secondary students in Alberta*, etc.).

It is expected that the results of Project One will generate further research questions, to be explored in subsequent projects. The second planned project extends Project One by looking at the experiences of youth in Alberta over a six-year time period, so that we can begin to build more detailed insight into the factors that shape our youth as they develop. Future projects will be shaped in part by learnings from these two projects.



## **PARTNERING MINISTRIES**

Alberta Government ministries, through their work in committees, working groups, and the Hub, participated in governance, provided funding or in-kind contributions, identified research priorities and a research agenda, participated in the development of research questions and the identification and development of data elements, developed privacy impact assessments and information sharing agreements, prepared data extracts and submitted them, generated a file to link research data with identity resolution data, participated in the validation of data and analyses, assessed adherence to data disclosure guidelines, and reviewed and approved reports.

The following six Alberta government ministries participated in Project One:

Aboriginal Relations  
Education  
Enterprise and Advanced Education  
Health  
Human Services  
Justice and Solicitor General

The *Aboriginal Relations* ministry works with Aboriginal communities, the federal government, industry and other stakeholders to promote social and economic opportunities to enhance the quality of life of Aboriginal people in Alberta.

*Education* is the ministry that leads the education system from Early Childhood Services through grade 12. Education is responsible for curriculum development and evaluation, teacher development and certification, support of special needs students, funding and support of school boards, provision of Aboriginal and Francophone education, management of the Alberta Initiative for School Improvement (AIS), and oversight of education policy and regulations.

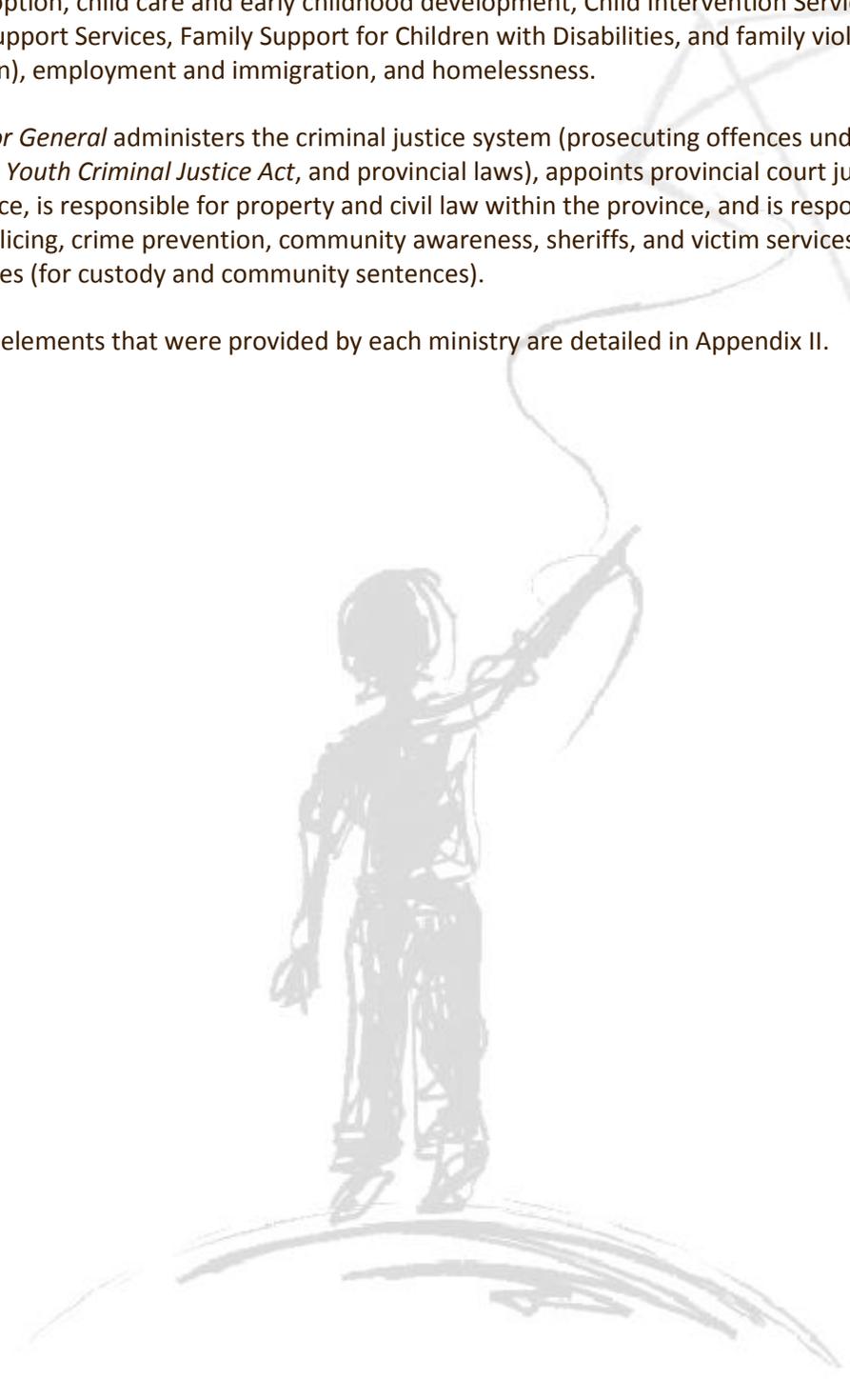
*Enterprise and Advanced Education* is the ministry responsible for advanced education and innovation programs in Alberta, including adult learning, apprenticeship and industry training, and technology innovation. The ministry's adult learning responsibilities include funding education providers, providing financial assistance to students, approving programs of study, and licensing and certifying providers. Apprenticeship and industry training responsibilities for the ministry include developing program standards, funding approved programs, and certifying apprentices and occupational trainees.

The Department of *Health* sets health care policy and standards, implements the policies, and ensures compliance. Alberta Health Services, reporting directly to the minister, oversees the planning and delivery of health supports and services to Albertans.

*Human Services* is the ministry responsible for providing programs and services related to children and youth (such as adoption, child care and early childhood development, Child Intervention Services, Family and Community Support Services, Family Support for Children with Disabilities, and family violence and bullying prevention), employment and immigration, and homelessness.

*Justice and Solicitor General* administers the criminal justice system (prosecuting offences under the *Criminal Code*, the *Youth Criminal Justice Act*, and provincial laws), appoints provincial court judges and justices of the peace, is responsible for property and civil law within the province, and is responsible for public security (policing, crime prevention, community awareness, sheriffs, and victim services) and correctional services (for custody and community sentences).

The research data elements that were provided by each ministry are detailed in Appendix II.



## STUDY DATA

### DATA COLLECTION

No data were collected directly by CYDL for Project One. Rather, secondary data were used, in the form of administrative data from the participating ministries. Administrative data are captured to enable and personalize service provision. In addition to demographic information on individuals, ministries also capture detailed data on services or programs provided (e.g., payments to physicians for services, student enrolment data, classification of categories of income support recipients, identification of the details of a criminal offence charge, etc.).

Administrative data have limitations, as do all types of data. On the other hand, administrative data provide richness that is unprecedented in more traditional types of research. Administrative data used by CYDL were population-based, allowing investigation of virtually all of Alberta's youth. Furthermore, the level of detail collected for administrative purposes can enable in-depth investigation not possible with many other types of data.

Three main types of administrative data were used for the project. Identity Resolution Data (IRD) consisted of demographic data, including names, addresses, and dates of birth; these data elements were used to link youth across ministries. Youth postal codes were used to determine region of residence and socio-economic status for the neighbourhoods in which youth resided. Anonymous Research Data (ARD) consisted of information on the programs and services provided to youth (such as health services, court sentences, maltreatment-related intervention services, post-secondary programs, etc.); these data were used to answer research questions of interest to the ministries.

The study year was fiscal year 2008/09. With the exception of Education and Enterprise and Advanced Education data, all data were for services provided between April 1, 2008 and March 31, 2009, with age determined on March 31, 2009.

- Data for Enterprise and Advanced Education were for services provided between September 1, 2008 and June 30, 2009, with age determined on March 31, 2009.
- Data for Education were for services provided to youth who were 12 to 19 years old on September 30, 2008. As a result, youth turning 12 between October 1, 2008 and March 31, 2009 *were not* included in the Education data but were included in other ministries' data. This resulted in the number of 12 year olds in the study population being lower (approximately 50% lower) than that of 13 to 17 year olds.
- Furthermore, although Education only provides services to youth who are under 20, the provision of services is defined by age at September 30. Youth who turned 20 between October 1, 2008 and March 31, 2009 *were* included in the Education data, resulting in the inclusion of 20 year olds in some analyses of Education data.

## SOURCE DATABASES

1.1 million IRD records and 4.2 million ARD records were obtained for the project from 13 different ministry databases, as per the table below.

Ministry	Database	Use in this report	IRD source?	ARD source?
Education	Corporate Data Warehouse (CDW)	Primary and secondary education achievement data	No	Yes
Enterprise and Advanced Education	Learner Enrolment Reporting System (LERS)	Post-secondary education enrolment data	No	Yes
Enterprise and Advanced Education	Stakeholder Registry System (SHR)	Post-secondary and K to 12 demographic data	Yes	No
Health	Inpatient – Discharge Abstract Database (DAD)	Hospitalization data	No	Yes
Health	Ambulatory Care (ACCS)	Emergency room visit data	No	Yes
Health	Practitioner Payments (SESE)	Physician visit data	No	Yes
Health	Alberta Health Care Insurance Plan Population Registry (AHCIIP registry)	Population registry	Yes	No
Human Services	Child Youth Information Module (CYIM)	Maltreatment and intervention data	Yes	Yes
Human Services	Family Support for Children with Disabilities Information System (FSCDIS)	Family Supports for Children with Disabilities data	Yes	Yes
Human Services	Central Client Directory (CCD)	Income support data	Yes	Yes
Justice and Solicitor General	Justice Online Information Network (JOIN)	Offence data	Yes	Yes
Justice and Solicitor General	Alberta Community Offender Management System (ACOM)	Corrections data (community supervision)	Yes	Yes
Justice and Solicitor General	Correctional Offender Management Information System (CoMIS)	Corrections data (custody)	Yes	Yes

See Appendix II for details of the data elements extracted for each ministry, and see Appendix III for definitions and notes specific to each ministry.

### Education

When a youth enrolls in the K to 12 education system, a record of their enrollment is kept by Education in their Corporate Data Warehouse. Data elements from this database were used to determine a youth's educational achievement, including age, grade, school type, special education codes, provincial achievement test scores, home education status, number of high school credits earned, number of higher level courses taken, average grade in higher level courses, possession of an Alberta Education certificate or diploma, and Alexander Rutherford scholarship eligibility. School authority type was also obtained from this database. Demographic data for the IRD extract came from the Stakeholder Registry System for both Enterprise and Advanced Education and Education

### Enterprise and Advanced Education

When students enroll in a post-secondary institution in Alberta, details of the enrollment are stored in the Learner Enrolment Reporting System (LERS). Data elements include demographic data, type of program, academic session (fall, winter, spring or summer), whether the student is enrolled full- or part-time, whether a student has completed the program, institution type, etc. Demographic data for the IRD extract came from the Stakeholder Registry System for both Enterprise and Advanced Education and Education.

### *Health*

When individuals visit a physician, visit an emergency room, or are admitted to hospital, a record of their visit is created, including patient demographics, diagnoses made, services provided, or reasons for visit. The Practitioner Payments database, enabling physician billing, details physician visits. The Ambulatory Care database contains details of emergency room visits, and the Inpatient—Discharge Abstract Database contains information on hospital admissions. Demographic data for the IRD extract for Health came from the Alberta Health Care Insurance Plan stakeholder registry.

### *Human Services*

#### *Child Intervention*

When maltreatment of a youth by a parent or guardian is suspected, an investigation may be initiated by Human Services to determine whether the youth is in need of intervention services. In some cases, it may be found that intervention services are not required, and referrals to other services in the community may be made. If the youth is found to be in need of intervention services, there is a range of services that may be provided. Services fall into two main groups: services the youth receives in the home with their parent(s) or guardian(s), and services the youth receives if they need to be removed from their home and placed into care. Data on investigations and intervention services were extracted from the Child and Youth Information Module (CYIM). Demographic data for the IRD extract for Human Services Child Intervention were also from CYIM.

#### *Family Support for Children with Disabilities (FSCD)*

FSCD provides parents or guardians with information, referrals, or funding for supports and services to support the growth and development of their children with developmental, physical, sensory, mental or neurological disabilities. The FSCD Information System (FSCDIS) extract provided data on types of support provided as well as disability types. Demographic data for the IRD extract for Human Services FSCD were also from FSCDIS.

#### *Income Support*

Income support in Alberta consists of financial support provided to individuals or families who cannot meet their basic needs for a variety of reasons. Support services and employment planning services are provided in addition to financial support. Financial resources, ability to work, and number of dependents determine the amount of financial support provided. An extract from the Central Client Directory (CCD) provided data on income support clients, including their household types (singles or couples, with or without children) and client types (whether they were expected to work or had barriers to full employment). Demographic data for the IRD extract for Human Services Income Support were also from CCD.

### *Justice and Solicitor General*

When a youth is charged by police with committing an offence, the information for the offence and for the youth is entered into the Justice Online Information Network (JOIN). This database includes demographic data, details about the statute (e.g., the Criminal Code) under which the youth was charged, the date of the offence, the date of the charge, the court location, etc. The extract from this database allowed determination of the number of offences a given youth was charged with in the study year. Demographic data for the IRD extract for Justice and Solicitor General offence charges were also from JOIN.

When a youth appears in court, data on the court outcome is stored in one of two databases maintained by Justice and Solicitor General.

- If the court outcome is “pretrial supervision” (the youth is released into the community while awaiting trial) or a sentence to be served in the community (probation or community service), data on the court outcome are stored in the Alberta Community Offender Management System (ACOM). ACOM contains offender demographics, charge information, probation status, conditions of release, offender risk assessments, etc.
- If the court outcome is “remanded into custody” (i.e., the court outcome is to send them to a correctional centre or group home to await trial) or “sentenced to custody” (i.e., the court outcome is to sentence them to a period of time spent in a correctional centre or group home), data on the court outcome is stored in the Correctional Offender Management Information System (CoMIS). CoMIS contains data on offender demographics, admissions, movements, charges, and releases.

Demographic data for the IRD extract for Justice and Solicitor General court outcomes were obtained from both ACOM and CoMIS.

## DATA LINKAGE

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### ***ANONYMOUS LINKAGE OVERVIEW***

In order for the research data for each youth to be collated across the various ministries, an anonymous linkage process was employed (see diagram on following page).

The ministries extracted the relevant data, standardized formatting and content as required, and assigned unique but meaningless identifiers to each record. The extracts were split into identity resolution data (IRD; names, dates of birth, and addresses), anonymous research data (ARD; specific to each ministry), and postal codes, with the same identifiers attached to the IRD, ARD, and postal code for each record.

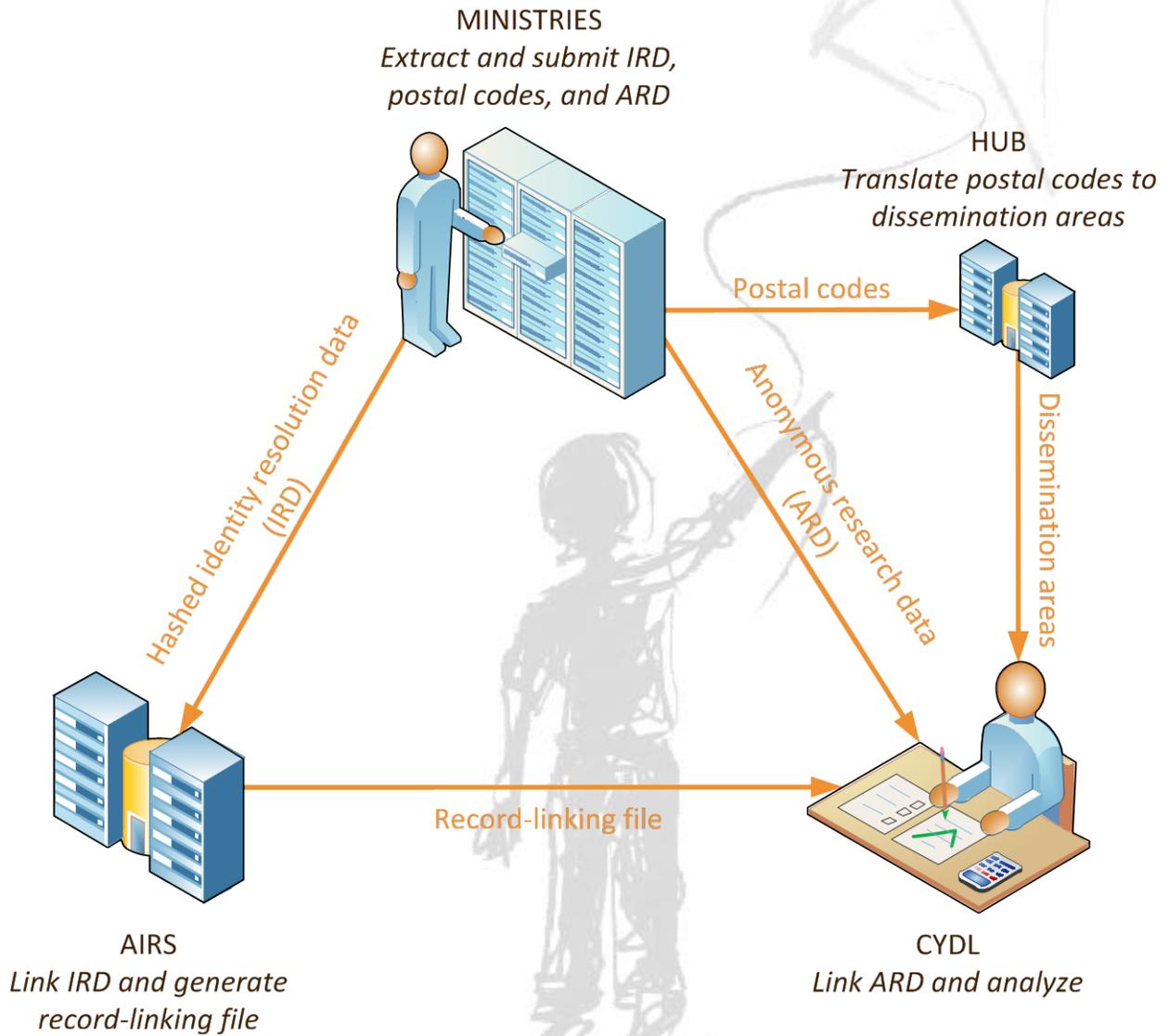
The IRD were submitted to a one-way hashing process and were sent securely to the Anonymous Identity Resolution System (AIRS). Running the AIRS software on the IRD extracts resulted in a record-linking file. When the software determined that records from different ministries referred to the same youth (based on comparisons of names, dates of birth, and addresses), the identifiers for those records were linked to one another in the record linking file. If a record did not link with any other records, that identifier appeared alone in the record linking file. The record linking file was sent securely to the CYDL.

Postal codes for each youth were submitted to the Hub (in this case, Health). The Hub used a translation file to convert the postal codes to Statistics Canada dissemination areas. The resulting file, containing identifiers and dissemination areas, was sent securely to the CYDL.

The ARD (research data specific to each ministry, with identifiers) were sent securely to the CYDL directly from the ministries.

Using the record linking file from AIRS, the CYDL linked the ARD from all ministries for each youth. A dissemination area was also assigned to each youth using the file provided by the Hub. The CYDL then validated the submitted data and performed analyses to answer research questions.

### CYDL Data Linkage Process



## THE AIRS PROCESS

The Anonymous Identity Resolution (AIRS) process used software developed by IBM® to determine whether a youth being served by a given ministry was the same youth receiving services from another ministry. To avoid sharing identifying information, ministries anonymized the IRD data elements via a one-way hashing process before submitting the IRD elements and record identifiers to AIRS.

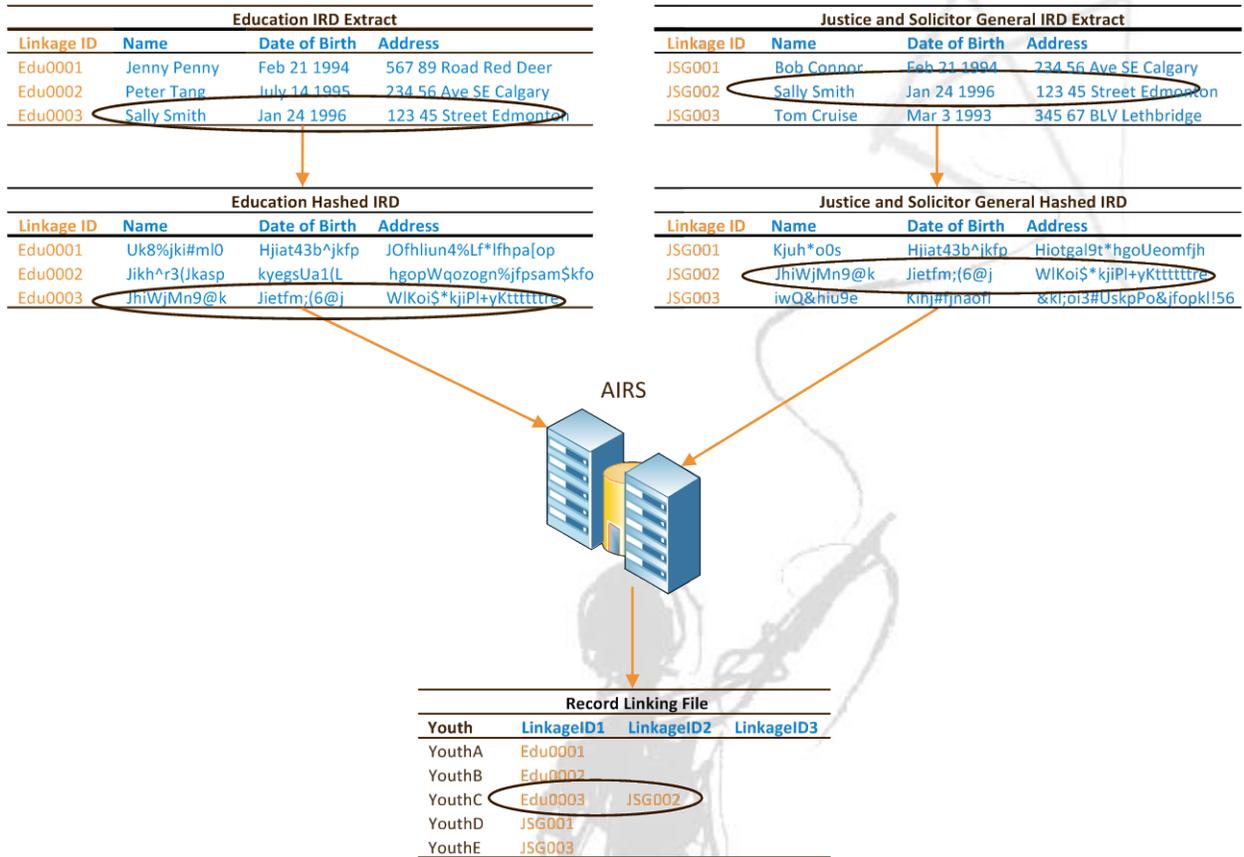
The hashed data were compared by the AIRS software, to determine whether the data provided by different ministries were for the same youth. Names, dates of birth, and addresses were compared to determine whether the individuals were the same person. Some standardization of elements occurred at this stage, so that, for example, *Robert* and *Bob* would be considered the same, as would *80 Avenue* and *80 Ave*.

The record linking file was the output from the AIRS linkage process. This file contained all identifiers from the IRD; the identifiers for those records deemed to be from the same individual were linked in the record linking file.

On the next page is a simplified example of the AIRS process for three youth for Education and three youth from Justice and Solicitor General. One record in Education has the same name, date of birth, and address as a record in Justice and Solicitor General. AIRS generates a record linking file that links the identifiers from these two records. The remaining records were not linked, and their identifiers appear alone in the record linking file.

CYDL received only the record linking file from the AIRS process. The identifiers in the record linking file were the same as those in the ARD and the dissemination area files, allowing the research data and the dissemination area files to be linked across all ministries from which the individuals accessed services.

### AIRS Process



## LINKAGE RULES

The AIRS software used a set of rules to link individuals. In the example above, the name, date of birth and address for the individual were all identical in the IRD from the two ministries. This is the most stringent criterion for a match, but it was not the only possible type of match. In actuality, linkages were possible with less stringent criteria. Below is a table with the three linkage rules used for Project One.

Rule	Description
One	Exact names, exact addresses, exact dates of birth
Two	Close names, exact addresses, exact dates of birth
Three	Close first and middle names and exact last names, exact dates of birth, address not considered

Close name matches were determined by an algorithm that considered various combinations of available names (e.g., if middle name and first name were switched, an exact match would fail but a close match would succeed).

If a match was not found between records with Rule One, Rule Two was tested. Failure to find a match with Rule Two led to comparison of records with Rule Three. If no match was found after Rule Three was applied, those records remained unlinked.

On the other hand, if a match was found with any of the rules, a new “entity” was formed, consisting of all of the elements (identifiers, names, dates of birth, and addresses) for the records that matched. Any subsequent data being evaluated for a match was compared to the entire entity; the rules would consider all instances of names, dates of birth, and addresses within the entity.

A new record could potentially cause two previously separate entities to merge together into a single entity containing the new record and both previous entities. This would occur when a new record shared enough information to match both entities, even though the two entities did not meet the criteria for a match on their own.

## LINKAGE VALIDATION

Following the implementation of the AIRS software and generation of the record linking file, a validation process occurred. Overall linkage rates were evaluated for reasonableness, based on known data. Initial linkage rates were not considered acceptable, and the settings for the AIRS process were changed in an iterative fashion. Once a reasonable set of linkage rates was obtained, with rules that made sense given the IRD provided, samples of individual linkages were tested.

Because the submitted records were anonymized, this validation process could not be completed by CYDL. The ministries were given samples of identifiers from both matched and unmatched records. They were asked to look at the records associated with those identifiers in their original (non-anonymized) extracts to determine whether the matches and non-matches were correct. There were four possible outcomes from these evaluations, as seen in the table below.

	Resolver Match	Resolver Non-Match
Ministry Match	True match	False non-match
Ministry Non-match	False match	True non-match

The higher the proportion of true matches (i.e., cases in which the resolver matched records that the ministries agreed were indeed the same individuals) and true non-matches (i.e., cases in which the resolver did not match records that the ministries agreed were not the same individuals), the better the linkages. Significant proportions of false matches and false non-matches are not desirable.

The proportions of false matches found by the ministries were not minimal but were not overly high. This finding allowed CYDL researchers and the relevant working groups and committees to conclude that, while some specific linkage issues were identified (see below), the linkage process was valid and analysis of the research data could proceed.

Issue	Description
Addresses	Addresses had to begin with a number to be included in matching (e.g., "Rural route #1" was not included)
Siblings/twins	Many of the false matches found by the ministries were siblings or twins
Initials	There was some indication that false non-matches were more common when first names were initials only
Hyphens	There was some indication that false non-matches were more common when names were hyphenated
Ethnicity	There was some indication that false non-matches had a higher proportion of names of non-Anglo Saxon origin
Multiple names	There was some indication that false non-matches had a higher proportion of youth with multiple names

**LINKAGE RATES**

**CYDL Project One Linkage Rates (percent)**

		Source dataset									
		Educ	EAE	CI1	CI2	FSCD	IS	JSG	ACOM	CoMIS	AHCIP
Linked dataset	<b>Number of Entities</b>	<b>272,696</b>	<b>113,583</b>	<b>7,311</b>	<b>7,753</b>	<b>3,766</b>	<b>6,606</b>	<b>6,315</b>	<b>5,060</b>	<b>941</b>	<b>655,867</b>
	<b>No match</b>	9.2	24.6	8.2	3.1	1.5	26.7	7.2	4.5	-	48.6
	<b>Educ</b>	<b>0.6</b>	2.2	72.0	69.2	84.2	8.4	73.2	77.5	69.7	37.6
	<b>EAE</b>	0.9	<b>0.5</b>	0.5	1.8	0.5	5.8	0.2	0.3	-	13.0
	<b>CI1</b>	1.9	0.0	<b>0.5</b>	27.9	7.0	0.2	14.2	13.6	22.1	1.0
	<b>CI2</b>	2.0	0.1	29.6	<b>1.1</b>	5.6	2.1	16.4	16.6	35.3	1.1
	<b>FSCD</b>	1.2	0.0	3.6	2.7	-	3.0	1.2	1.1	1.7	0.5
	<b>IS</b>	0.2	0.3	0.2	1.8	5.2	-	-	-	-	0.7
	<b>JSG</b>	1.7	0.0	12.3	13.4	2.0	-	<b>3.6</b>	70.7	96.2	0.8
	<b>ACOM</b>	1.4	0.0	9.4	10.9	1.5	-	56.7	<b>0.2</b>	87.5	0.7
	<b>CoMIS</b>	0.2	-	2.8	4.3	0.4	-	14.3	16.3	-	0.1
<b>AHCIP</b>	90.3	75.1	86.0	93.0	93.4	71.7	83.4	85.8	91.4	<b>1.4</b>	

**CYDL Project One Linkage Rates (number)**

		Source dataset									
		Educ	EAE	CI1	CI2	FSCD	IS	JSG	ACOM	CoMIS	AHCIP
Linked dataset	<b>Number of Entities</b>	<b>272,696</b>	<b>113,583</b>	<b>7,311</b>	<b>7,753</b>	<b>3,766</b>	<b>6,606</b>	<b>6,315</b>	<b>5,060</b>	<b>941</b>	<b>655,867</b>
	<b>No match</b>	24,976	27,899	603	241	57	1,763	457	228	-	318,486
	<b>Educ</b>	<b>1,549</b>	2,486	5,263	5,367	3,170	556	4,620	3,924	656	246,329
	<b>EAE</b>	2,486	<b>572</b>	34	139	19	380	15	16	-	85,301
	<b>CI1</b>	5,263	34	<b>36</b>	2,162	262	14	899	687	208	6,285
	<b>CI2</b>	5,367	139	2,162	<b>84</b>	210	139	1,036	842	332	7,212
	<b>FSCD</b>	3,170	19	262	210	-	197	77	55	16	3,518
	<b>IS</b>	556	380	14	139	197	-	-	-	-	4,738
	<b>JSG</b>	4,620	15	899	1,036	77	-	<b>237</b>	3,578	905	5,268
	<b>ACOM</b>	3,924	16	687	842	55	-	3,578	<b>10</b>	823	4,342
	<b>CoMIS</b>	656	-	208	332	16	-	905	823	-	860
<b>AHCIP</b>	246,329	85,301	6,285	7,212	3,518	4,738	5,268	4,342	860	<b>9,408</b>	

Educ= K to 12 Education enrolment (12 to 20 years)

EAE= Enterprise and Advanced Education enrolment (12 to 24 years, most over 17)

CI1 = Human Services Child Intervention investigations (12 to 18 years)

CI2 = Human Services Child Intervention interventions (12 to 22 years)

FSCD = Family Support for Children with Disabilities (12 to 18 years)

IS = Income support (18 to 24 years)

JSG = Justice and Solicitor General offence charges (12 to 17 years)

ACOM = Alberta Community Offender Management (Justice and Solicitor General youth in community service) (12 to 17 years)

CoMIS = Correctional Management Information System (Justice and Solicitor General youth in custody) (12 to 17 years)

AHCIP = Alberta Health Care Insurance Plan registry (12 to 24 years)

## LINKAGE RATE INTERPRETATION

There are two tables above; the top table contains percentages and the bottom contains counts.

The columns in the linkage rate tables are source datasets, which were linked to the datasets appearing in the rows (the linked datasets). For example, 3.6% (262) of the 7,311 CY1 entities matched to FSCD entities, and 72.0% (5,263) matched to Education entities. *Reminder: Entities represent individuals as determined by the AIRS software. An entity consists of one or more records, all of which have been deemed to represent the same youth.*

The “No match” row refers to entities for a given dataset that did not link to any other datasets.

Dashes represent suppressed data, when fewer than 10 entities occurred.

The diagonal (in bold) represents “internal matches”, with records in a given database linking to other records in the same database (representing a mixture of false positive matches due to linkage errors or data errors, and true positives, in which a youth actually had duplicated data in the ministry database). The internal match rates were calculated as the number of records that were incorporated into other entities, out of the total number of records in a database. The internal match rates are under 1.5%, with the exception of the data on offence charges from Justice and Solicitor General (3.6%). The presence of duplicated records for the same youth is a known issue in this database.

Age groups of youth receiving services must be kept in mind when interpreting linkage rates. For example, just 8.4% of youth receiving income support were linked to youth in the K to 12 education system. Income support data were for 18 to 24 year olds, while 12 to 20 year olds were included in the Education data, so the low linkage rate is expected because of low overlap in populations.

The last row of the tables contains data on linkages to the Alberta Health Care Insurance Plan (AHCIP) registry, which includes all youth in Alberta with a health care number (close to the total population of youth). Linkage rates to this database were expected to be high, and they generally are. A notable exception is Enterprise and Advanced Education students, many of whom are from out of province and would not be expected to be in the registry. As well, only 71.7% of income support clients were linked to the registry, perhaps reflecting the more transient nature of this population.

### *Database-specific summaries of linkage rates*

See the Source Databases section for descriptions of sources and content of databases.

#### Education students (Educ column)

K to 12 education students included 12 to 20 year olds (this is the second column in the tables). 2% or fewer of the youth enrolled in the education system received services from Human Services Child Intervention and FSCD, overlap with the advanced education system and income support was low (largely due to low overlap in age groups served), involvement in the justice and corrections systems was low, and registration in the AHCIP was high. Nevertheless, given the large Education population, there were more than 5,000 youth in the education system who were involved with Human Services Child Intervention, 3,170 receiving FSCD services, 4,620 in the justice system, and more than 4,000 involved in corrections.

#### Advanced education students (EAE column)

The first column contains the linkage rates for students enrolled in advanced education programs. Due to their ages (up to 24, but mostly over 17) and the higher proportion of youth from out of province, this population low rates of overlap with many of the other youth populations. There was a substantial population of youth (2,486 youth, or 2.0% of the advanced education population) who were enrolled in the K to 12 system and the post-secondary system in the same school year, and 0.3% of youth in advanced education were receiving income support. The linkage rate to the AHCIP registry was lower than most ministries, as discussed above, likely due to high numbers of out-of-province students.

#### Human Services Child Intervention clients (CI1 and CI2 columns)

The third and fourth columns are the linkage rates for Child Intervention investigations for maltreatment (CI1; 12 to 18 year olds) and interventions for maltreatment (CI2; 12 to 22 year olds; see Data These two populations have high rates of overlap with one another (an investigation often leads to an intervention), fairly high rates of enrolment in the K to 12 education system, and high rates of involvement in the justice system (12 or 13% of youth) and the corrections system (3 to 4% in custody and 9 to 11% in community service). Rates of linkage to the AHCIP registry were high, particularly for the interventions group.

#### Human Services Family Support for Children with Disabilities clients (FSCD column)

The fifth column represents the population of youth 12 to 18 years old receiving services from FSCD. This population shows moderate overlap with the Human Services Child Intervention investigations and interventions populations, the highest linkage rate to Education (many youth are referred from the Education system to FSCD and youth in the program are expected to attend school), some overlap with the income support population (this would be 18 year olds only), low involvement in the justice or corrections systems, and the highest linkage rate to the AHCIP registry (many FSCD clients have ongoing health concerns and as such would be less likely than others not to be registered with AHCIP).

#### Human Services Income Support Clients (IS column)

Youth receiving income support (18 to 24 years) generally had low rates of linkage with other ministries, again largely due to their ages. Of income support clients, 8.4% were enrolled in the K to 12 system (presumably, many of these youth were upgrading high school) and 5.8% were enrolled in the post-secondary system.

#### Youth charged with offences (JSG column) and Youth in community supervision (ACOM column)

Youth charged with offences (12 to 17 years; JSG column) had linkage patterns that were very similar to youth in community supervision corrections programs (12 to 17 years; ACOM column); the overlap between the two populations was, as expected, large. Enrolment in the K to 12 education system was fairly high (73.2% of youth charged with offences and 77.5% of youth in community supervision). Youth receiving investigations or interventions for maltreatment were over-represented in both of these populations, with maltreatment-related interventions being provided to 16.4% of youth in the justice system and 16.6% of youth in community supervision. Linkage rates to advanced education and FSCD were low, while linkage rates to the ACHIP registry were high.

#### Youth in custody (CoMIS column)

Youth in custody in the corrections system (12 to 17 years; CoMIS column) followed a similar but more extreme pattern than youth in community service, with only 69.7% of youth in custody enrolled in the K to 12 education system, and fully 35.3% of youth in custody receiving maltreatment-related interventions. The rate of linkage to the ACHIP registry was higher (91.4%) than for youth in the justice system or community service.

#### Youth in the Alberta Health Care Insurance Plan registry (AHCIP column)

There were 655,867 youth in the AHCIP registry, many more than received services from the other ministries participating in the project. The only sizeable linkage rates for this population, as expected, were to the other two large populations in the project (students enrolled in the K to 12 and post-secondary education systems). Almost half (48.6%) of youth in the AHCIP registry were not linked to youth in any other ministry, in large part due to the fact that many ministries provided services to youth under 18, while youth in registry extract were up to 24 years of age and therefore did not use services provided by other ministries. Note, of course, that most of the unlinked youth in the AHCIP did use health services.

## METHODOLOGY AND LIMITATIONS

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### DATA CLEANING AND DERIVATION OF INDICATORS

#### *Data manipulations prior to analysis*

- Age, gender, and postal code (translated into Statistics Canada dissemination areas) were provided for each individual by each participating ministry. In the case of discrepancies between ministries (which occurred in less than 0.05% of cases), the most common value for an indicator was chosen. In the event of two or more most common values, the value for the indicator was chosen randomly from among the most common values.
  - For example, Justice and Solicitor General may have provided 17 years as the age of a particular youth, Education 16 years, and FSCD 16 years. In this case, 16 years would have been assigned to that youth (as the single most common value). If Child Intervention had contributed an age of 17 years as well, there would have been two most common values (16 and 17) and one would have been randomly assigned to that youth.
  - Very rarely, application of this algorithm resulted in assigning an age to a youth that was out of the age range for services provided by that ministry (e.g., a youth charged with an offence might have been assigned an age of 18 years, while the possible age range is 12 to 17). If this occurred, the individual was removed from the analysis.
  - In a few cases, application of this algorithm resulted in male gender being assigned to individuals receiving health services that were not possible for males (i.e., obstetrics and gynecology). This was noted in the relevant report when it occurred.
- Enterprise and Advanced Education provided data on all post-secondary academic sessions in which youth were enrolled in the study year. When a student was enrolled in more than one session in the study year, one session was chosen to provide values for credential type, enrolment status, and institution type for that individual.
  - Full-time enrolments were chosen over part-time, winter session enrolments were chosen over fall sessions, and fall sessions were chosen over spring and summer enrolments. If only spring or summer enrolments occurred, the session was randomly chosen from among the spring and summer enrolments.

### Derivation of data elements

- Dissemination areas of residence were used by CYDL to determine **region of residence**. Urban areas included large centres with urban core populations greater than 100,000 (i.e., Edmonton and Calgary metropolitan areas) and mid-sized centres with urban cores greater than 10,000. All other areas were categorized as rural.
- **Socio-economic status (SES)** captures the social and material environments in which youth live. A youth was assigned a socio-economic status via an index based on the Statistics Canada dissemination area in which he or she resided<sup>1</sup>. Six indicators were included in the index: percent without a high school diploma, the employment ratio, average income, percent of single families, percent of persons living alone, and percent of persons separated, divorced, or widowed. Socio-economic status values fell into five quintiles. In many reports, “lowest socio-economic status” refers to the lowest quintile of socio-economic status, while “highest” refers to the highest quintile. Other reports included all five quintiles.
  - Socio-economic status may be missing for a youth for a number of reasons (a postal code was not provided, the postal code was not associated with an Albertan dissemination area, or the socio-economic status index was unavailable for the dissemination area).
- **Mental health status** was defined by the presence or absence of mental health diagnosis codes in Health’s databases (Inpatient—Discharge Abstract Database, Ambulatory Care, and Practitioner Payments), or in the Family Support for Children with Disabilities Information System. Only youth who were registered with the Alberta Health Care Insurance Plan for the full fiscal year were included in the mental health analyses. **Mental health service use is a proxy for presence of a mental health condition**: Some youth with mental health conditions may not have accessed mental health services in Alberta during the year, and some mental health service use may have occurred for youth who did not in fact have mental health conditions.
  - **Mental health conditions** were grouped based on The Johns Hopkins ACG® Case-Mix System (version 8.2)<sup>2</sup>. Mental health conditions were *mood/anxiety* (anxiety, depression, bipolar disorder, etc.), *behavioural* (attention-deficit disorder, regulatory disorder, mental or behavioural problems due to substance use, etc.), *neurodevelopmental* (autism, fetal alcohol spectrum disorder, cerebral palsy, etc.), or *schizophrenia/psychoses* (schizophrenia, psychosis, delusional disorder, etc.). Conditions were not mutually exclusive; a youth could have a diagnosis in more than one category.

1. Pampalon, R., Hamel, D., Garnache, P., Raymond, G. (2009). A deprivation index for health planning in Canada. *Chronic Diseases in Canada*, 29(4), 178-91.
2. The Johns Hopkins University (2008). *The Johns Hopkins ACG® System Reference Manual, Version 8.2*. Johns Hopkins University: Baltimore.

## STUDY POPULATION

A total of 1,091,813 IRD records from 10 datasets were submitted to the AIRS process by the participating ministries.

Once the AIRS process completed and youth were matched across ministries, a total of 713,830 entities resulted. In other words, of the 1,091,813 original records, 377,983 records were considered matches to other records and were added to entities, resulting in the 713,830 final entities that comprised our data set (the number of entities by ministry is in the top row of the linkage rate tables. Note that the total across ministries is larger than 713,830 because some of the entities include youth who received services from two or more ministries).

There were 655,867 entities in the AHCIP registry extract for Project One (57,963 fewer than the total number of entities in the project). The AHCIP registry is often used to estimate population in Alberta because health care provision is universal in the province. However, some youth are not registered, in particular those new to the province, temporary residents, and transient populations.

The AHCIP registry excludes youth who have not been permanent residents for at least six months, members of the Canadian Armed Forces or the Royal Canadian Mounted Police, and federal penitentiary inmates. The Project One population includes these youth; the largest subpopulation of youth captured in Project One who would not be in the AHCIP registry are post-secondary students whose permanent address is outside Alberta (there were 28,282 youth in the Enterprise and Advanced Education extract who did not match to the AHCIP registry). There would also be youth in our database who were members of the Armed Forces or the RCMP or were federal inmates.

There were a further 26,367 youth enrolled in the K to 12 education system who were not linked to the AHCIP registry. Youth who are new to the province and were not yet registered in AHCIP would be expected to be the majority of this group.

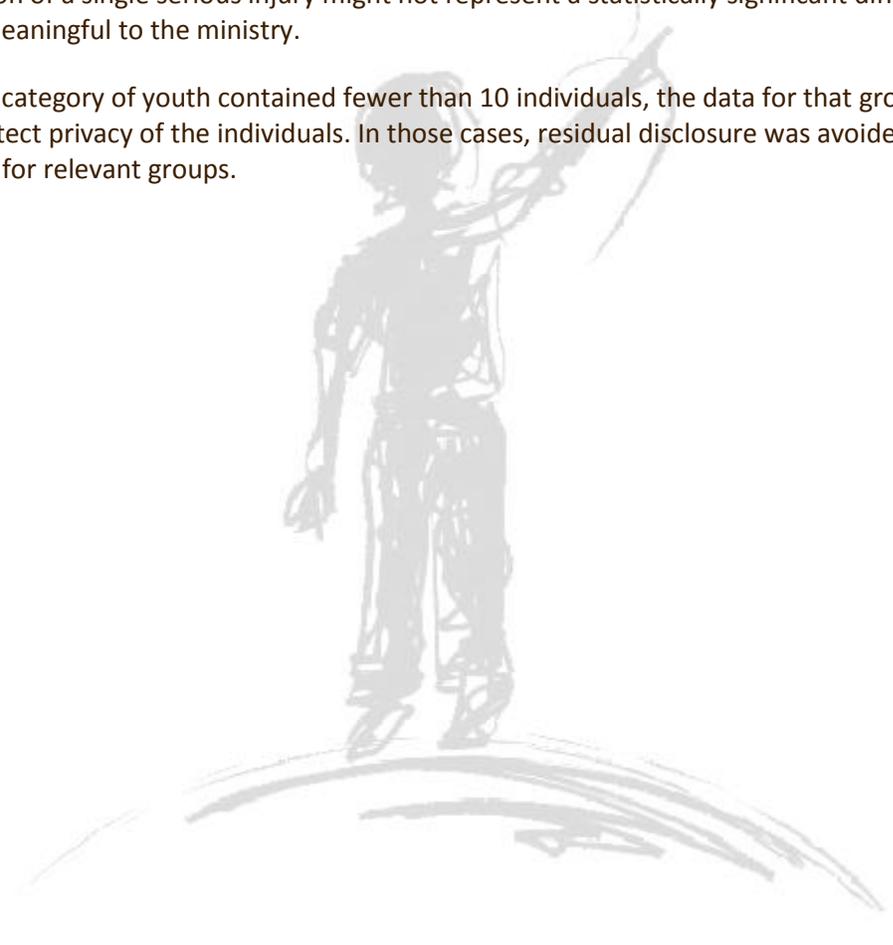
Failed linkages due to incorrect IRD or linkage software issues are expected to have resulted in the exclusion of a small but unknown number of Albertan youth.

## **ANALYSES**

The central goal of Project One was to provide a comprehensive description of the experiences of Albertan youth in a single year. As such, the analyses were descriptive, with no testing of pre-defined theories. For the most part, analyses consisted of cross-tabulations of sub-populations of interest, with results expressed as percentages of a given population. Where appropriate, comparisons were made to complementary populations.

Significance testing of differences was not carried out. Our dataset was population-based, negating the need for significance testing due to the absence of sampling error. Furthermore, the criterion for meaningfulness was policy relevance: regardless of the statistical significance of a finding, ministries would be expected to develop policy based on whether the differences were meaningful to the ministry. For example, a ministry may be interested in preventing every instance of serious injury among the youth it serves. Prevention of a single serious injury might not represent a statistically significant difference, but it may in fact be meaningful to the ministry.

In all analyses, if a category of youth contained fewer than 10 individuals, the data for that group were suppressed to protect privacy of the individuals. In those cases, residual disclosure was avoided by suppressing totals for relevant groups.



## **DATA LIMITATIONS**

### *Administrative data limitations*

Administrative data are not collected for research purposes; this means that their use for research purposes comes with some caveats.

Constructs useful for research purposes must be derived from indicators captured in administrative data and are therefore only proxies for the underlying constructs.

There is variation in data collection policies and procedures across ministries. Possible sources of error include coverage errors (a ministry may fail to populate a record for a service provided), non-response errors (in which data are not available for a service), response errors (in which incorrect data are provided for a service), or processing errors (in which ministries make errors when recoding, for example, in assigning codes to written descriptions of events).

Ministry-level validation of administrative data will vary across indicators, and will be dependent on administrative need for validation rather than on research need for accuracy and completeness.

### *Linkage limitations*

Analysis resulting from the linkage process must be interpreted with the understanding that some false matches (both positive and negative) will occur in the data, although false matches are thought to be relatively rare. A summary of known issues is discussed in the Linkage Validation section of this report. The linkage validation process led to the conclusion that there is a tendency for under-representation of the following youth in the linked dataset: rural youth, twins, youth with initials as first names, youth with hyphenated names, youth with some types of last names of non-Anglo Saxon origin, and youth with multiple names. The pattern of linkage rates indicates that these problems are fairly limited in nature.

An analysis comparing key indicators of youth who were matched across at least two IRD databases with youth who were not matched with any other IRD databases was conducted. These “matched” and “unmatched” youth did not differ substantially in terms of gender, Aboriginal status, region of residence, educational achievement, or presence of a mental health condition. There were more unmatched youth in the older age groups (name and address changes were likely more common in older youth). There was also a tendency for the two lowest socio-economic status quintiles to have higher rates of unmatched youth, in particular the low-middle SES group (address changes may be more common in lower socio-economic status groups).

### *General limitations*

The study year was fiscal year 2008/09. With the exception of Education and Enterprise and Advanced Education data, all data were for services provided between April 1, 2008 and March 31, 2009, with age determined on March 31, 2009.

- Data for Enterprise and Advanced Education were for services provided between September 1, 2008 and June 30, 2009, with age determined on March 31, 2009.
- Data for Education were for services provided to youth who were 12 to 19 years old on September 30, 2008. As a result, youth turning 12 between October 1, 2008 and March 31, 2009 *were not* included in the Education data but were included in other ministries' data. This resulted in the number of 12 year olds in the Education data being lower (approximately 50% lower) than that of 13 to 17 year olds.
- Furthermore, although Education only provides services to youth who are under 20, the provision of services is defined by age at September 30. Youth who turned 20 between October 1, 2008 and March 31, 2009 *were* included in the Education data, resulting in the inclusion of 20 year olds in some analyses of Education data.

Some ministry service uses tend to be brief, and others are more long-term. As such, services received in the study year were not necessarily simultaneous. For example, youth who were hospitalized and in custody (corrections), may or may not have been so at the same time.

Only youth with a value for a given indicator were included in analyses involving that indicator (i.e., missing values were excluded).

Errors discovered in the data were excluded from analyses (following communications with ministries).

*For research data notes specific to ministries, see Appendix III*

## APPENDICES

### APPENDIX I CYDL Project One Governance

Committee or Group	Description
Deputy Ministers Committee	Prioritizes evidence needs for policy, approves final report.
Assistant Deputy Ministers Committee	Identifies the research agenda.
Coordinating Committee	Contributes to research question development and research product dissemination plan.
Research Working Group	Contributes to research question development, identification of desired data elements, development of data workbook outlines, feasibility analysis, and validation of data and analyses. Reviews final report.
Data/Technical Working Group	Contributes to feasibility analysis, development of final data elements and workbooks, carries out data extraction and submission to the Hub and CYDL.
Legal/Privacy Working Group	Considers legal and privacy issues in data workbooks, completes privacy impact assessment and information sharing agreements, performs disclosure assessment.
Hub	Translation of postal codes to dissemination areas, operation of identity resolution software, transfer of dissemination area files and record linking file to CYDL.
Child and Youth Data Lab (CYDL)	Facilitates research question development and identification of data elements, leads feasibility analysis, develops data workbooks, completes ethics board submission, facilitates data extraction and submission and data linkage process, links research data, analyzes research data, generates reports and other research products, participates in research product dissemination.

**APPENDIX II CYDL Project One Data Elements**

Source	Indicator	Description
Education	Age	Age in years and months
	Gender	Female or male
	Dissemination area	Area of residence
	Educational achievement	Educational performance relative to grade and age
	School authority type	Type of primary or secondary school attended (public, private, separate, charter, Francophone, other)
	Age	Age in years and months
	Gender	Female, male, or unknown
	Dissemination area	Area of residence at time of application, and for current residence
	Institution attended	Post-secondary institution attended. Grouped into: Baccalaureate and Applied Studies Institutions, Comprehensive Academic and Research Institutions, Comprehensive Community Institutions, Independent Academic Institutions, Polytechnical Institutions, Specialized Arts and Culture Institutions.
	Credential type	Type of credential student is working towards. Grouped into: Bachelor/Applied/Graduate Level Program, Certificate/Diploma Program, Not Applicable (No credential)
Enterprise and Advanced Education	Enrolment status	Full- or part-time status
	Session enrolled	Session enrolled (fall, winter, spring, summer)
	Parchment received	Whether the parchment for the program was received. Grouped into: yes, no, or non-parchment program.
	Age	Age in years and months
	Gender	Female or male
	Dissemination area	Area of residence
	Mental health status	Mental health-related service use (physician claims, hospitalizations, emergency departments). Categorized as neurodevelopmental, psychiatric, affective, behavioural, or none.
	Physician visits	For each visit to a physician, provider type (general practitioner or specialist), scrambled provider code, and date of visit were provided. Provider code and date of visit were used to calculate unique doctor/day visits. For mental health-related visits, reason for visit was provided.
	Emergency room visits	For each visit to an emergency room, the primary reason for the visit was provided. For mental health-related visits, all reasons for visit were provided.
	Hospitalizations	For each hospitalization, the primary service code for the visit and the length of stay were provided. For mental health-related visits, all service codes were provided.
Human Services (Child Intervention investigations)	Age	Age in years and months
	Gender	Female or male
	Dissemination area	Area of residence at the time of intervention, and at the time of placement (if in care).
	Aboriginal status	Aboriginal status (Aboriginal or not).
	Result of assessment/investigation	Outcome of maltreatment-related investigation (in care, not in care, no intervention needed)
	Age	Age in years and months
Human Services (Child Intervention interventions)	Gender	Female or male
	Dissemination area	Area of residence at the time of intervention, and at the time of placement (if in care).
	Aboriginal status	Aboriginal status (Aboriginal or not).
	Type of service	Type of intervention service provided (in care, not in care)

**APPENDIX II CYDL Project One Data Elements continued**

Source	Indicator	Description
Human Services (FSCD)	Age	Age in years and months
	Gender	Female or male
	Dissemination area	Area of residence
	Mental health status	Mental health diagnosis category (neurodevelopmental, psychiatric, affective, behavioural, none).
	Child category	Highest level of service provided in the most recent service agreement (out of home placement, specialized services, child-focused services, family-focused services, unclassified)
	Primary disability	Medical diagnosis for primary disability (autism-spectrum disorders, other developmental conditions, physical/motor conditions, mental health disorders, sensory impairments, health conditions, unconfirmed conditions)
	Secondary disability	Medical diagnosis for secondary disability (same categories as above)
	Tertiary disability	Medical diagnosis for tertiary disability (same categories as above)
	Age	Age in years and months
	Gender	Female or male
Human Services (Income Support)	Dissemination area	Area of residence
	Client type	Expectation for future labour force participation for head of household (expected to work, barriers to full employment, or not applicable)
	Household type	Household type (single without children, single parent with children, couple without children, couple with children)
	Age	Age in years and months
	Gender	Female or male
Justice and Solicitor General (offence charges)	Dissemination area	Area of residence
	Offence statute	Youth Criminal Justice Act, Part of the Criminal code, other statute
	Age	Age in years and months
Justice and Solicitor General (corrections)	Gender	Female or male
	Dissemination area	Area of residence
	Aboriginal identity	Aboriginal identity (Aboriginal or not)
	Type of service	Outcome of court procedure (custody or remand, community supervision or pretrial supervision)

### APPENDIX III Research data notes specific to ministries

#### Education

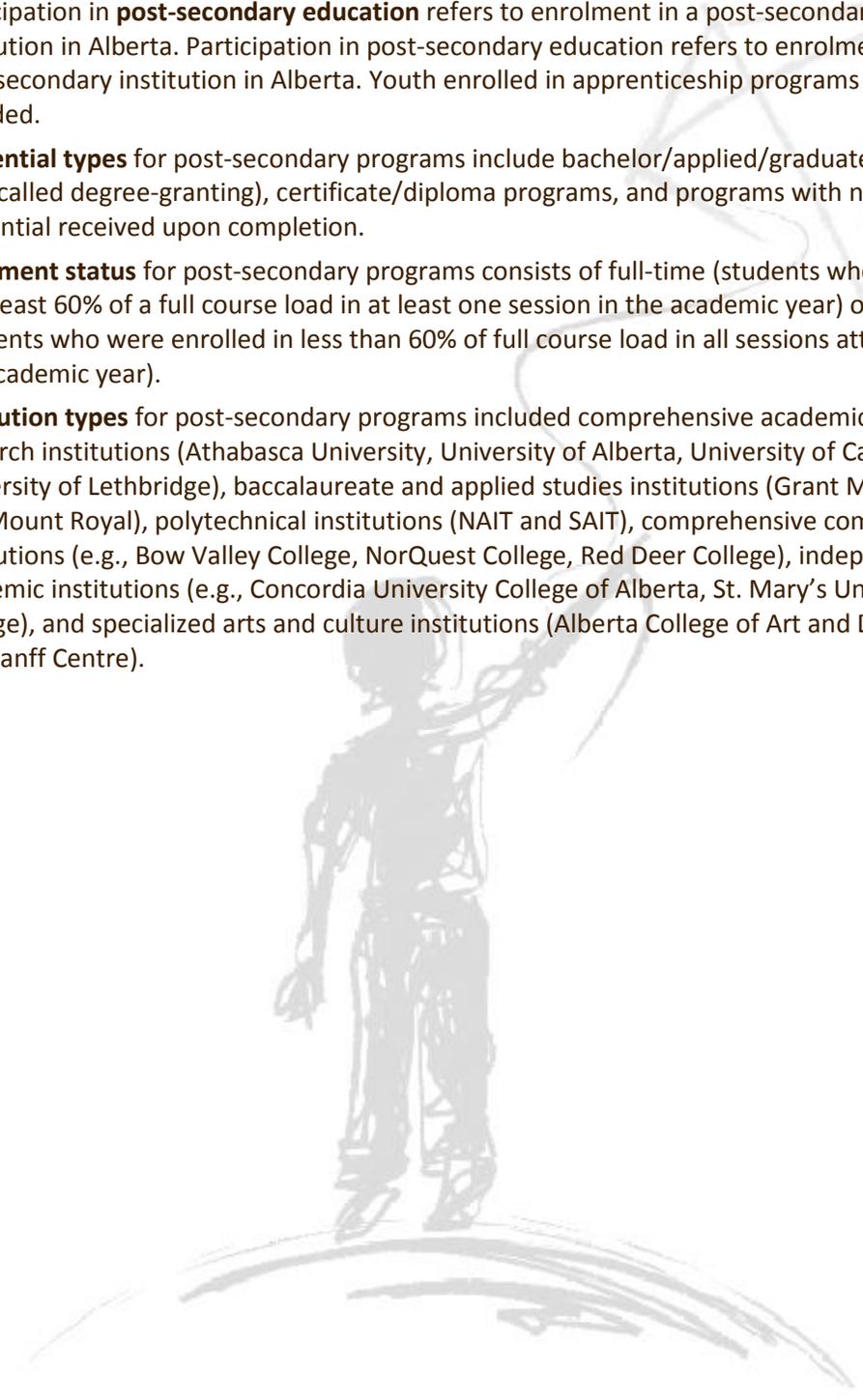
- Participation in **education** refers to enrolment in the kindergarten to grade 12 education system in Alberta. No data were available for students who attended schools on First Nations reserves or in Lloydminster.
- **Educational achievement** was computed by Education using age, grade, school type, special education codes, provincial achievement test scores, home education status, number of high school credits earned, number of higher level courses taken, average grade in higher level courses, possession of an Alberta Education certificate or diploma, and Alexander Rutherford scholarship eligibility. Educational achievement was categorized as *above, meeting, or below expectations* for a student's age and grade. An educational achievement rating was not available for 12 to 14 year old youth without scores on provincial achievement tests, for youth in 'other' schools (accredited post-secondary institutions offering high school courses for credit to adults; most youth in these schools were between 18 and 20 years), and for home-schooled high school youth with no credits.

#### **School authority types**

- There is one publicly-funded system of education in Alberta. The public system includes public, separate, Francophone and charter schools.
  - **Public** schools are non-denominational schools.
  - **Separate** schools are established under rights guaranteed by the Constitution of Canada for the minority religion (Protestant or Roman Catholic).
  - **Francophone** schools provide instruction in French to children whose parents have rights under section 23 of the Canadian Charter of Rights and Freedoms.
  - **Charter** schools are autonomous public schools designed to meet the needs of students through a specific program or approach. They must be non-religious.
- **Private** schools operate outside the public education system. Private schools may charge tuition and other fees. There are two kinds of private schools.
  - Accredited private schools must offer the Alberta Program of Studies with certificated teachers; they may be partially funded or non-funded.
  - Registered private schools are not required to offer the Program of Studies and are not funded.
- **Other** schools are accredited post-secondary institutions offering high school courses for credit to adults.

### Enterprise and Advanced Education

- Participation in **post-secondary education** refers to enrolment in a post-secondary institution in Alberta. Participation in post-secondary education refers to enrolment in a post-secondary institution in Alberta. Youth enrolled in apprenticeship programs were not included.
- **Credential types** for post-secondary programs include bachelor/applied/graduate programs (also called degree-granting), certificate/diploma programs, and programs with no credential received upon completion.
- **Enrolment status** for post-secondary programs consists of full-time (students who enrolled in at least 60% of a full course load in at least one session in the academic year) or part-time (students who were enrolled in less than 60% of full course load in all sessions attended for the academic year).
- **Institution types** for post-secondary programs included comprehensive academic and research institutions (Athabasca University, University of Alberta, University of Calgary, University of Lethbridge), baccalaureate and applied studies institutions (Grant MacEwan and Mount Royal), polytechnical institutions (NAIT and SAIT), comprehensive community institutions (e.g., Bow Valley College, NorQuest College, Red Deer College), independent academic institutions (e.g., Concordia University College of Alberta, St. Mary's University College), and specialized arts and culture institutions (Alberta College of Art and Design and The Banff Centre).



## Health

- New and returning Alberta residents, if they are eligible, must register for **Alberta Health Care Insurance Plan** (AHCIP) coverage to receive insured health services.
- Youth in the “**health registry**” refers to all youth who are insured in Alberta. This includes any eligible youth who is a permanent resident of Alberta, living at least 183 days per year in the province.
- Members of the Canadian Armed Forces, Royal Canadian Mounted Police and federal penitentiary inmates are not eligible (they receive coverage from the federal government), but dependents of these non-eligible residents, who reside in Alberta, are eligible.
- **Physician visits** reflect fee claims made by physicians for services provided when patients visit their offices. In this report, multiple claims by a given physician for a given patient on the same day were counted as a single visit. Reasons for physician visits were not available for this project.
- **Emergency room visits** refer to visits to emergency departments for assessment or treatment. **Reason for emergency room visit** was based on the primary diagnostic code given for each visit. Categories of reasons included *injury/poisoning* (ICD-10-CA<sup>1</sup> Chapter XIX Injury, poisoning and certain other consequences of external causes), *respiratory* (Chapter X Diseases of the respiratory system), *influencing factors* (Chapter XXI Factors influencing health status and contact with health services), *symptoms/signs* (Chapter XVIII Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified), and *other* (all other ICD-10-CA chapters).
- **Hospitalizations** refer to admissions to hospital for assessment or treatment. **Hospital service type** was defined by the main patient service code (the patient service that contributes to the longest portion of a patient's stay; see the Canadian Institute for Health Information's DAD Abstracting Manual<sup>2</sup> for codes). Categories of services were labelled *general medicine* (patient service codes 01 to 29, 55, 56, 58, 60 to 63, 66 to 76, 82, 91, 96, 99), *surgery/procedure* (patient service codes 30 to 49, 81, 87), *psychiatry* (patient service codes 64, 65), or *pregnancy-related* (patient service codes 51 to 54, 59).

1. Canadian Institute for Health Information (2001). *International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Canada*. CIHI: Ottawa.
2. Canadian Institute for Health Information (2006). *DAD Abstracting Manual All Provinces Information 2006-2007 Edition*. CIHI: Ottawa.

### Human Services Child Intervention

- **Maltreatment-related investigations** occur when there is a concern that the safety or well-being of a youth is threatened. Outcomes of investigation include in care after investigation (the youth is taken into care, and placed in a foster home, with family, in a group home, etc.), out of care services (the youth remains in the home and the family receives support services), and no intervention needed. Youth self-identified or were identified by a parent or guardian as Aboriginal or non-Aboriginal.
- **Maltreatment-related interventions** occur when the safety or well-being of a youth is threatened. Categories of intervention include in care services (the youth is taken into care, and placed in a foster home, with family, in a group home, etc.), and out of care services (the youth remains in the home and the family receives support services). Youth self-identified or were identified by a parent or guardian as Aboriginal or non-Aboriginal.

### Human Services Family Support for Children with Disabilities

- **Family Support for Children with Disabilities (FSCD)** is a ministry of Human Services program that provides a range of supports and services to families that strengthen their ability to support and care for their child with a disability based on their needs. In addition to information, referral and advocacy, services and supports may include:
  - **Family Support Services** may include assistance with counseling, extraordinary clothing and footwear costs, costs to attend medical appointments and respite.
  - **Child-Focused Services** are provided when a child has a confirmed diagnosis and assessment information to specify their individual needs. These services include respite services, aide supports, child care supports, and health-related supports.
  - **Specialized Services** are available for children with severe disabilities and/or multiple needs. A Multi-Disciplinary Team is part of the review of complex cases and assists in determining services that are appropriate to the health and developmental needs of the child.
  - **Out of Home Services** provide long-term living arrangements and short-term relief care to accommodate the needs of severely disabled, medically fragile children and their families.
- For the purposes of analysis, families were grouped according to the highest level of service received. For instance, all families that received Out of Home Services were counted in the Out of Home Group regardless of any other services they received. Similarly, only families who did not receive other Child Focused, Specialized or Out-of Home services were included in the Family Support Group.

### Human Services Income Support

- **Income support** refers to financial benefits provided to individuals and couples who cannot meet their basic needs.
- The **client types** for income support clients are *expected to work* (clients who are looking for work, working, or unable to work in the short term) and *barriers to full employment* (clients who have difficulty working because of a chronic mental or physical health problem or because of multiple barriers to employment).
- **Household types** include singles (one adult in the household) with or without children, and couples (two adults in the household) with or without children.

### Justice and Solicitor General

- Youth with **offence charges** include those charged with criminal offences or administrative offences related to criminal offences (e.g., failure to appear in court, breach of probation, etc.). **Number of offences** in the study year was available, but individual incidents were not available. This means that youth charged with multiple offences may have had multiple charges in a single incident, or they may have been charged in multiple incidents.
- Youth with **corrections involvement** have appeared before the Court or a Justice of the Peace for an offence charge and have been remanded in custody or placed under pre-trial supervision in the community awaiting further court dates, or have been found guilty and sentenced to a community disposition (i.e. Fine, Probation, Community Service Work, Deferred Custody) and/or custody (in which the sentence is served in a young offender facility).
- Youth involved in corrections self-identified as Aboriginal or non-Aboriginal.
- Youth involved in corrections may have received educational programs from a school authority that was different from the school authority type they attended while not involved in the correctional system. The school authority assigned to the youth involved in corrections may or may not have been the school authority type in which they were enrolled while involved in corrections.