



## Education

# Student Outcomes Measures Based on the Grade 10 Cohort

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## Methodologies for Rates Calculation

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# Alberta Education Student Outcomes Measures Based on the Grade 10 Cohort

## Methodologies for Rates Calculation

### 1.0 Introduction

This document provides a summary description of the methodologies used by Alberta Education to calculate student outcomes measures based on the Grade 10 Cohort.

These measures include:

- High School Completion Rates (HSCR),
- High School to Post-Secondary Transition Rates (Transition) and
- Diploma Examination Participation Rates (DEPR).

These methodologies accompany the release of authority rates to individual school authorities and schools on the Alberta Education Extranet.

This document is also available on Alberta Education's Accountability Pillar website at <https://education.alberta.ca/accountability-pillar/how-the-pillar-works/everyone/methodology-resources>

### 2.0 Purpose

Alberta Education's business plan includes the following provincial performance measures:

- the 5-year High School Completion Rate,
- the 6-year High-School to Post-Secondary Transition Rate, and
- the Diploma Examination Participation Rate for four or more diploma exams.

The Accountability Pillar Online Reporting Initiative (APORI) consolidates measures reporting to public, separate, Francophone, charter and accredited private school authorities. APORI evaluates and reports on school jurisdiction and school performance using the following measures:

- the 3-year High School Completion Rate,
- the 6-year High-School to Post-Secondary Transition Rate, and
- the Diploma Examination Participation Rate for four or more diploma exams.

Several additional measures are calculated and reported to provide additional information for the ministry, school authorities, and schools:

- the 4-year High School Completion Rate,
- the 4-year High-School to Post-Secondary Transition Rate,
- the 5-year High-School to Post-Secondary Transition Rate, and

- the Diploma Examination Participation Rate for 0, 1, 2, 3, 5 and 6 or more diploma exams.

All of these measures are calculated at the provincial, authority and school levels. The table below summarizes where each measure is typically used or evaluated.

Measure	Time Frame or Number of Exams	Alberta Education's Business Plan	Alberta Education's Accountability Pillar	Additional information
High School Completion Rate	3-Year		✓	
	4-Year			✓
	5-Year	✓		
High-School to Post-Secondary Transition Rate	4-Year			✓
	5-Year			✓
	6-Year	✓	✓	
Diploma Exam Participation Rate	0+ Exams			✓
	1+ Exams			✓
	2+ Exams			✓
	3+ Exams			✓
	4+ Exams	✓	✓	
	5+ Exams			✓
	6+ Exams			✓

### 3.0 Data Sources

Student data:

- The High School Completion Rates, High School to Post-Secondary Transition Rates, and Diploma Examination Participation Rates are calculated based on detailed student data from Alberta Education's Provincial Approach to Student Information (PASI).
- Prior to May 2016, detailed student information was sourced from several separate Alberta Education systems: Student Information System (SIS), Student Records System (SRS) and the Diploma Examination System (DES).

Students attending post-secondary institutions:

- Starting with the 2013/2014 school year, students are identified as attending post-secondary institutions based on data from Alberta Advanced Education's Data Collection and Reporting (DCAR) system.
- Learner Enrolment and Reporting System (LERS) files provided by Alberta Innovation and Advanced Education were used to identify students attending post-secondary institutions between the 2002/2003 and 2012/2013 school years.
- Duplicate Application Detection Project (DAD) files provided by the Alberta Council on Admissions and Transfer were used to identify students attending post-secondary institutions up to and including the 2002/2003 school year.

Students registered in apprenticeship programs:

- Starting with the rates calculated for the 2008/2009 school year, Alberta Advanced Education's Apprenticeship, Trade and Occupation Management System (ATOMS), is used to identify students registered in apprenticeship programs.
- In prior years, Alberta Innovation and Advanced Education's Skilled Trades Information System (STIS) provided information on students registered in apprenticeship programs.

Attrition:

- The estimate of attrition uses data from Statistics Canada, *Annual Demographic Estimates* as well as census data.

Students attending post-secondary institutions out-of-province:

- The High School to Post-Secondary Transition Rate is adjusted by an estimate of Alberta students attending post-secondary institutions out-of-province. This estimate is based on aggregate student counts from two Alberta Advanced Education systems: the Data Collection and Reporting (DCAR) system and the Student Finance System (SFS).

## **4.0 Common Elements in the three Student Outcomes Measures**

### **4.1 Grade 10 Cohort**

The Grade 10 Cohort is comprised of first-time Grade 10 students whom the government of Alberta has a responsibility to educate and who can reasonably be expected to complete high school and write diploma examinations (in the case of the HSCR and DEPR), and have the capacity to pursue post-secondary education (in the case of the Transition rate). Once established for any year, the Grade 10 Cohort remains in place and is used for calculating the above rates in subsequent years.

Students are included in the Grade 10 Cohort in the first school year in which they have a Grade 10 registration at a public, separate, Francophone, charter or accredited private school. The following categories of students are excluded from the Grade 10 Cohort:

- students who register after September 30<sup>th</sup> of the school year;<sup>1</sup>
- students who are registered in schools under provincial or federal authorities;<sup>2</sup>
- students who are registered in schools not affiliated with Alberta (e.g., Lloydminster school authorities);
- students who have a concurrent Grade 9 registration in the same school year;
- adult students (older than 18 when they start Grade 10);
- students who are identified as having a severe or moderate cognitive disability or a severe multiple disability;
- students attending Hutterite Colony schools; and
- visiting or exchange students.

## 4.2 Attrition

Attrition is the estimate of the number of students from the Grade 10 Cohort who leave the province or die in the three years subsequent to the start of Grade 10. Attrition estimates are applied to the High School Completion Rate, the High School to Post-Secondary Transition Rate, and the Diploma Examination Participation Rate. The Transition Rate and Participation Rate attrition estimates are based on the estimates calculated for the High School Completion Rate.

The attrition estimate for each age group is based on the following factors:

- mortality;
- emigration;
- interprovincial out migration;
- an estimate of the percentage of 16-, 17- and 18-year-olds who are enrolled in school (school participation rate);<sup>3</sup> and
- a downward adjustment to account for youth who are not in school (see table below).

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<sup>1</sup> Students who start Grade 10 after September 30<sup>th</sup> of the school year and are registered in Grade 11 in the subsequent school year will not be included in the Grade 10 Cohort.

<sup>2</sup> Provincial authorities are comprised mostly of post-secondary institutions, while federal authorities are comprised mostly of Band operated schools. These students are not the responsibility of the Government of Alberta.

<sup>3</sup> The school participation rate is calculated annually by dividing the total enrolment of students of the relevant age in the province by the provincial population of the same age taken from Statistics Canada's *Annual Demographic Estimates*, formerly *Annual Demographic Statistics*. Incorporating a school participation estimate into the calculation of the attrition estimate takes into consideration the fact that not all 16- 17- and 18-year-olds are enrolled in school.

The source of the statistics for deaths, emigrants, inter-provincial out-migrants and population by age (for calculation of attrition and school participation rates) is Statistics Canada, *Annual Demographic Estimates*. Attrition estimates are based on data by age at the census division level.

The following provides an example of attrition calculated for students entering Grade 10 in September 2009 of the 2009/2010 school year.

School Year	Age	Deaths	Emigrants	Inter-provincial Out-Migration	Returning Out-Migrants From Prior Year - 10%	Net Inter-provincial Out-Migration	Total Attrition	School Participation Rate	Adjust. for Non-School Movers	Net Attrition
2009/2010	16	C2	D2	E2	F2 = 0	G2 = E2-F2	H2 = C2+D2+G2	I2 = 94.2%	J2 = 10%	K2 = (H2*I2)*(1-J2)
2010/2011	17	C3	D3	E3	F3 = E2*10%	G3 = E3-F3	H3 = C3+D3+G3	I3 = 76.5%	J3 = 25%	K3 = (H3*I3)*(1-J3)
2011/2012	18	C4	D4	E4	F4 = E3*10%	G4 = E4-F4	H4 = C4+D4+G4	I4 = 36.9%	J4 = 40%	K4 = (H4*I4)*(1-J4)
<b>Estimated Provincial Attrition for the Grade 10 Cohort</b>										<b>K5 = K2+K3+K4</b>

The attrition estimate applied to each rate is calculated based on the average of the previous three Grade 10 Cohort attrition estimates. For example, when rates for the 2015/2016 school year were calculated, the attrition estimate was the average of the attrition estimates for school years 2010/2011 to 2012/2013; 2011/2012 to 2013/2014; and 2012/2013 to 2014/2015.

## 5.0 Formulas for Student Outcomes Measures based on the Grade 10 Cohort

The following are three of the Student Outcomes Measures which are based on the Grade 10 Cohort.

### 5.1 High School Completion Rate

Alberta Education calculates the rate at which Alberta students complete high school within three, four, and five years of starting Grade 10.

#### 5.1.1 Formula

The provincial rate is calculated by dividing the number of high school completers by the number of students in the Grade 10 Cohort, adjusted for attrition.

$$\left( \text{High School Completers} \right) / \left( \text{Grade 10 Cohort} - \text{Attrition Factor} \right) = \text{High School Completion Rate}$$

## 5.1.2 Definitions

### 5.1.2.1 High School Completers

#### ○ **Timeframe for completion**

Students from the Grade 10 Cohort must complete high school within three, four, or five years of starting Grade 10 to be considered a high school completer. A student who starts Grade 10 in September 2009 at the start of the 2009/2010 school year and completes high school by the end of the 2011/2012 school year is considered to have completed high school within three years. A student from the same 2009/2010 Grade 10 Cohort who completes high school by the end of the 2012/2013 school year is considered to have completed within four years. Similarly, a student from the 2009/2010 Grade 10 Cohort who completes high school by the end of the 2013/2014 school year is considered to have completed within five years.

#### ○ **Credentialed completers**

Students can achieve high school completion status through a variety of means. The majority of students receive one of the following credentials within three, four, or five years of starting Grade 10:

- ✓ ***Alberta High School Diploma***
- ✓ ***High School Equivalency Diploma (GED)***
- ✓ ***Certificate of High School Achievement (completion of Knowledge and Employability courses and the certificate requirements)***

#### ○ **Non-credentialed Completers**

Students who leave school without one of the above credentials but who have earned credits in high school courses that enable them to continue into post-secondary or apprenticeship programs within three, four, or five years of starting Grade 10 are considered non-credentialed high school completers. Non-credentialed high school completion is achieved through one of the following means:

- ***Enrolment at a Post-Secondary Institution:*** Students enrolled in a credit program in an Alberta post-secondary



institution, who have not achieved completion status through any of the above means, are considered non-credentialed high school completers. The information on post-secondary enrolments incorporates post-secondary Classification of Instructional Programs (CIP) coding to better identify students enrolled in programs not deemed to be post-secondary level (e.g. academic upgrading). Students in these programs are not considered completers for the purpose of this measure.

- **Apprenticeship Program Participation:** Students registered in an apprenticeship program who have not achieved completion status through any of the above means and are no longer registered in school are considered non-credentialed high school completers. The Alberta Student Number is used to match students from the Grade 10 Cohort with the apprentices in Alberta Advanced Education's apprenticeship information system (ATOMS). Students in a Registered Apprenticeship Program (RAP) are excluded because they are still in high school. Students identified as both attending a post-secondary institution and having registered in an apprenticeship program are reported as attending a post-secondary institution.
- **Academic Standing:** Students who have not achieved completion status through any of the above means are considered to have achieved academic standing if they have passed a minimum of five Grade 12 courses including a Language Arts diploma exam course and three other diploma exam courses. These students may be eligible for post-secondary entrance and some may be attending a post-secondary institution out of province.

#### 5.1.2.2 Continuers

Students, including those registered in upgrading programs at post-secondary institutions, who have not completed high school within three, four or five years but are still involved with the secondary system as evidenced by their having a course completion record, are counted as continuers. A course completion record simply indicates that the student has a course record; it does not indicate whether the student passed or failed or withdrew from the course.

### 5.1.2.3 Leavers

Students from the Grade 10 Cohort who are not “completers” or “continuers” are considered “leavers”. The attrition estimate (see Section 4.2) is applied to the count of students who are identified as leavers as some of these students may have left the province or are deceased.

### 5.1.2.4 Mover/Non-Mover

Students from the Grade 10 Cohort whose reporting authority is not the same as the authority of their Grade 10 registration are classified as “movers” (see Section 6.1).

## 5.2 High School to Post-Secondary Transition Rate

To track the extent that Alberta high school students participate in post-secondary study, Alberta Education calculates the rate at which students move into post-secondary education within four to six years of starting Grade 10.

### 5.2.1 Formula

The High School to Post-Secondary Transition Rate is calculated by dividing the number of students who enter post-secondary programs by the number of students in the Grade 10 Cohort, adjusted for attrition.

$$\left( \begin{array}{l} \text{In-Province} \\ \text{Post-} \\ \text{Secondary} \\ \text{Attenders} \end{array} + \begin{array}{l} \text{Estimate of} \\ \text{Out-of-} \\ \text{Province Post-} \\ \text{Secondary} \\ \text{Attenders} \end{array} \right) / \left( \begin{array}{l} \text{Grade 10} \\ \text{Cohort} \end{array} - \begin{array}{l} \text{Attrition} \\ \text{Factor} \end{array} \right) = \text{Transition Rate}$$

### 5.2.2 Definitions

#### 5.2.2.1 In-Province Post-Secondary Attenders

Students from the Grade 10 Cohort are counted as in-province post-secondary attenders if they are registered in a post-secondary-level program at an Alberta post-secondary institution or if they are registered in an apprenticeship program in Alberta.

- **Timeframe for transition**

Students from the Grade 10 Cohort must be identified as participating in post-secondary education within four to six years of starting Grade 10 to be counted in the High School to Post-Secondary Transition Rate. A student who starts Grade 10 in September 2009 (at the start of the 2009/2010 school year) and

is identified as participating in post-secondary education by the end of the 2012/2013 school year is considered to have entered the post-secondary system within four years of starting Grade 10. A student who starts Grade 10 in September 2009 (at the start of the 2009/2010 school year) and is identified as participating in the post-secondary system by the end of the 2014/2015 school year is considered to have entered the post-secondary system within six years of starting Grade 10.

- **Attendance at a Post-Secondary Institution**

Students are considered to have entered the post-secondary system if they attend a credit program, part-time or full-time, in a publicly-funded Alberta post-secondary institution. Information on post-secondary enrolments incorporates post-secondary Classification of Instructional Programs (CIP) coding to better identify students enrolled in programs not deemed to be post-secondary level (e.g. academic upgrading). Students in these kinds of programs are not considered transitioners for the purpose of this measure.

- **Registration in an apprenticeship program**

A student is considered to have entered the post-secondary system if the student has registered in an apprenticeship program. A student registered in the Registered Apprenticeship Program (RAP) is not considered to have entered the post-secondary system as students in RAP are high school students. The Alberta Student Number is used to match students from the Grade 10 Cohort with the apprentices in ATOMS, Alberta Advanced Education's apprenticeship information system. Students identified as attending both a post-secondary institution and having registered in an apprenticeship program are reported as attending a post-secondary institution.

### **5.2.2.2 Estimate of Out-of-Province Post-Secondary Attenders**

Alberta Education does not specifically track Alberta students who participate in post-secondary programs outside of Alberta. An estimate of the number of students who have left the province to pursue post-secondary education is therefore factored into the High School to Post-Secondary Transition Rate.

The out-of-province estimate uses aggregate counts of Alberta students receiving financial assistance for studies both in-province and out-of-province based on data from Alberta Advanced Education's Students Finance System (SFS). The premise is that in any given year, the percentage of students from the Grade 10 Cohort attending

post-secondary programs out-of-province is similar to the percentage of students receiving financial assistance for study out-of-province.

The Students Finance System data pertains only to students attending post-secondary institutions. The out-of-province-estimate does not include an estimate of the number of Alberta students participating in apprenticeship programs out of province. Instead the estimate focuses on those who constitute the majority of Alberta post-secondary students: those that attend post-secondary institutions.<sup>4</sup>

The SFS counts are available at the sector level (specifically: universities and private university colleges; public colleges, which include the former vocational colleges; and technical institutes) and include only students receiving financial assistance to attend post-secondary institutions on a full-time basis. The out-of-province estimate is therefore determined based on the number of full-time post-secondary students from the Grade 10 Cohort attending post-secondary institutions within each sector. This increases the precision of the out-of-province estimate, as the rate at which students attend post-secondary institutions out of province varies by sector.

The estimate of the number of students attending post-secondary programs out-of-province in each sector is therefore based on the following factors:

- the count of students from the Grade 10 Cohort who have moved into provincial post-secondary education in the sector in a given year;
- the percentage of Alberta students within each sector attending full-time in a given year; and
- the percentage of students receiving financial assistance to attend full-time post-secondary programs out-of-province in each sector in a given year.

In the case of the Grade 10 Cohort of 2009/2010 Grade 10 students (see table below), the estimates of students attending post-secondary institutions out-of-province are calculated separately for each sector for the 2012/2013 school year. Added together they provide an estimate of the number of students from the Grade 10 Cohort who entered post-secondary studies out of province by the fourth year after the start of Grade 10.

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<sup>4</sup> The Apprenticeship Industry and Training Division, Alberta Advanced Education and Technology estimates that while only about 10% of Canada's labour force resides in Alberta, approximately 20% of the country's apprentices are trained in Alberta. In addition, Alberta has apprenticeship programs in more trades and occupations than most other provinces. It is therefore assumed that the number of young Albertans who register in apprenticeship programs out of province after high school is minimal.

The same process is used to calculate the estimate of the number of students from the Grade 10 Cohort entering post-secondary studies out-of-province in the fifth school year (2013/2014) and in the sixth school year (2014/2015) after the start of Grade 10. These estimates are added to the previously calculated estimate of the number of students attending post-secondary institutions in the fourth year after the start of Grade 10 to provide a final estimate of students who, by six years after the start of Grade 10 in September 2009, had entered post-secondary education out-of-province.

As an example, for the calculation of the out-of-province estimate for the 4 and 6 year Transition Rates, based on the Grade 10 Cohort of 2009/2010 Grade 10 students, the following table would apply:

<b>Sample Calculation Out-of-Province Estimate for 4 and 6 Year Transition Rate: Grade 10 Cohort of 2009/2010 Grade 10 Students</b>								
School Year	Post-secondary Sector	Count of PS attenders from cohort studying in province in school year	% Students in province studying full-time: year and sector specific	% Students receiving financial assistance for full-time study out-of-province, by sector	Estimate of out-of-province attenders by sector	Annual out-of-province estimate (all sectors)	Out-of-province estimate: 4 Year Rate	Out-of-province estimate: 6 Year Rate
		(A)	(B)	(C)	(D)	(E)		
							$[(A)*(B)*(C)]/[1-(C)]$	
12/13	Univ	Univ13	86.17%	9.95%	U99	E4 = U99+C99+T99	<b>E4</b>	
12/13	Coll	Coll13	88.92%	3.96%	C99			
12/13	Tech	Tech13	64.99%	1.60%	T99			
13/14	Univ	Univ14	85.12%	9.89%	U00	E5 = U00+C00+T00		
13/14	Coll	Coll14	83.12%	3.80%	C00			
13/14	Tech	Tech14	91.33%	1.76%	T00			
14/15	Univ	Univ15	84.58%	10.79%	U01	E6 = U01+C01+T01		<b>E4+E5+E6</b>
14/15	Coll	Coll15	88.71%	4.70%	C01			
14/15	Tech	Tech15	84.85%	1.60%	T01			

### 5.3 Diploma Examination Participation Rate

Alberta Education determines the rate at which Alberta students participate in diploma examinations within three years of starting Grade 10. This is done by calculating diploma examination participation incrementally as the percentages of students with zero, at least one, at least two, at least three, at least four, at least five, or at least six diploma examinations by the end of their third year of high school.

The Diploma Examination Participation Measure (DEPR) was developed to complement the Diploma Examination Results Measure. The Diploma Examination Results Measure is calculated as the percentages of students in diploma examination courses who achieve the acceptable standard and/or the standard of excellence on diploma examinations. One way to improve results on that measure is to limit participation of diploma courses to strong academic students. The existence of the DEPR discourages such a practice because that behavior would result in low Diploma Examination Participation rates.

#### 5.3.1 Formula

The provincial rate is calculated by dividing the number of diploma examination participants by the number of students in the Grade 10 Cohort, adjusted for attrition.

$$\left( \begin{array}{c} \text{Diploma} \\ \text{Examination} \\ \text{Participants} \end{array} \right) \div \left( \begin{array}{c} \text{Grade 10} \\ \text{Cohort} \end{array} - \begin{array}{c} \text{Attrition} \\ \text{Factor} \end{array} \right) = \begin{array}{c} \text{Diploma} \\ \text{Examination} \\ \text{Participation} \\ \text{Rate} \end{array}$$

To arrive at the number of Diploma Examination Participants used in the formula above, attrition adjustments are made. The formula below is used to calculate the attrited number of students writing one examination. The same formula is applied to calculating the attrited number of students for each of the categories of those writing 0, 1, 2, 3, 4, 5, 6 or more examinations.

$$\left( \begin{array}{c} \text{Total No. of} \\ \text{students} \\ \text{writing 1} \\ \text{exam} \\ \text{(leavers and} \\ \text{non-leavers)} \end{array} \right) - \left( \begin{array}{c} \text{Number of} \\ \text{leavers} \\ \text{writing 1} \\ \text{exam} \end{array} \right) \Bigg/ \left( \begin{array}{c} \text{Total} \\ \text{Number} \\ \text{of} \\ \text{leavers} \end{array} \right) \times \left( \begin{array}{c} \text{Attrition} \\ \text{factor} \end{array} \right) = \begin{array}{c} \text{Attrited Total} \\ \text{No. of Diploma} \\ \text{participants} \\ \text{writing 1 exam} \end{array}$$

### 5.3.2 Timeframe for determining Participation

Students from the Grade 10 Cohort must write at least one examination within three years of starting Grade 10 to be considered a diploma examination participant. A student who starts Grade 10 in September 2009 at the start of the 2009/2010 school year and completes at least one examination by the end of the 2011/2012 school year is considered to have participated in the diploma examination within the three years.

The student must have written at least one of the examinations listed below, with any of the examinations written only once. Also, students in the Grade 10 Cohort are not considered a diploma examination participant if they do not have an examination mark.

Any one exam in each of the following subject areas:

English	English Language Arts 30-1, English Language Arts 30-2
Français	Français 30, French Language Arts 30
Mathematics	Mathematics 30-1, Mathematics 30-2
Social Studies	Social Studies 30-1, Social Studies 30-2
Sciences	Biology 30, Chemistry 30, Physics 30, Science 30

## 6.0 Calculation of Rates at the Provincial, Authority and School Levels

Authority and school rates are calculated for each public, separate, Francophone, charter and accredited private school authority and school. Rates are calculated for Alberta Distance Learning Centre (ADLC) and provided to Pembina Hills, the governing authority for ADLC. As such, students registered at ADLC are excluded from the authority rates but are included in the overall provincial rate.

Authority and school level rates are calculated in the same manner as at the provincial level, with special consideration for student movement within the province and the estimation of attrition at the authority and school levels.

Often students will have attended more than one school or even more than one school authority over the period of time the rates are being calculated. When this occurs, a determination needs to be made about the inclusion of such students in rates for a particular school and school authority.

### 6.1 Determination of Reporting Authority and School

The reporting authority associated with each student is calculated using a sequence of tie-breaker rules applied to the list of authorities where the student gained high school credits. Rules are applied sequentially until there are no ties and a reporting authority is identified.

1. **In which authority did the student earn the most credits?** For most students, a reporting authority is identified by applying this rule. If there is a tie, the following rules are applied to the list of authorities where the student gained the most credits.
2. **If the student had registration records for Grade 12...**
  - a. in which authority did the student have a Grade 12 registration?
  - b. that was in the same authority as their Grade 10 Cohort registration?
  - c. where the Grade 12 registration was also their most recent school year registration?
  - d. with their most recent start date?
3. **If the student did not have registration records for Grade 12...**
  - a. in which authority did the student have their most recent school year registration?
  - b. where their most recent registration was in the same authority as their Grade 10 Cohort registration?
  - c. and also had their most recent start date?

If a tie remains after applying all of the above rules, the reporting authority associated with each student is arbitrarily assigned based on the authority related to whichever of the student's records had the highest enrolment identifier.



The enrolment identifier is an automatically derived value used to uniquely identify each student's registration record within Education's database systems.

After the reporting authority has been established, the reporting school associated with each student is calculated similarly. In this case, the rules are applied at the school level to the list of schools within the student's reporting authority. Ultimately, each student is associated with only one reporting school and one reporting authority, and the reporting school is always chosen from schools attended within the selected reporting authority.

## 6.2 Estimate of Attrition at the Authority and School Level

Attrition estimates are calculated for each public, separate and Francophone, charter and accredited private school authority and school. Attrition estimates are derived by age at the census division level as described previously (Section 4.2).

To apply attrition from the census division level to each authority and school, the Statistics Canada and census population data is weighted and apportioned based on two factors: where students reside and the number of "leavers" in each school authority and school.

Attrition by census division is apportioned between dissemination areas based on the geographic distribution of the census population.

$$\text{Attrition Count for Census Division} \times \left( \frac{\text{Dissemination Area Population Count}}{\text{Census Division Population Count}} \right) = \text{Attrition Count for Dissemination Area}$$

Attrition by dissemination area is then allocated between postal codes based on the addresses of the students who have been identified as "leavers" (described in Section 5.1.2.3).

$$\text{Attrition Count for Dissemination Area} \times \left( \frac{\text{Count of "Leavers" by Postal Code}}{\text{Count of "Leavers" by Dissemination Area}} \right) = \text{Attrition Count for Postal Code}$$

A portion of the attrition count by postal code is then associated with each student from that postal code who was identified as a "leaver".

$$\text{Attrition Count for Postal Code} / \text{Count of "Leavers" by Postal Code} = \text{Attrition Count per student at Postal Code}$$

In the case of the school level attrition estimate, the attrition count per student is summed together by reporting school to create an overall estimate for the school. For the authority level estimate, the attrition count per student is summed together by reporting authority.

**For more information on these Student Outcomes Measures, please contact  
System Assurance Branch at 780-643-9193**