



# TRANSFER STUDENT SUCCESS IN ALBERTA CASE STUDY: MOUNT ROYAL UNIVERSITY

For the Alberta Council on Admissions and Transfer

May 14, 2018

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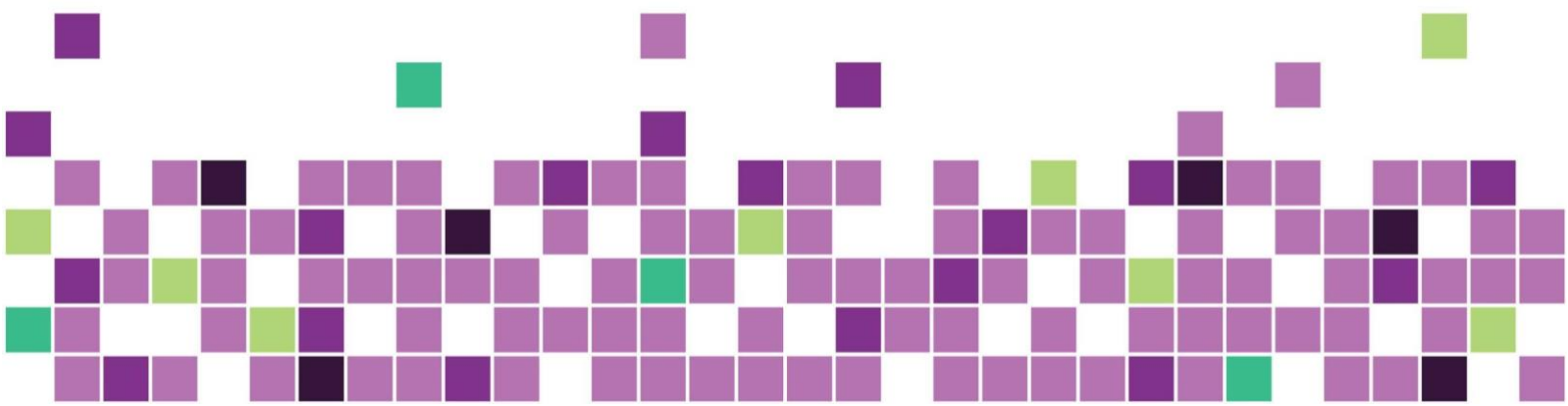
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# Executive Summary

The Alberta Council on Admissions and Transfer (ACAT) contracted Plaid Consulting to perform a comprehensive review of transfer student success metrics at Mount Royal University (MRU). Plaid is a data and analytics consulting agency focused on helping post-secondary institutions, councils, and governments make data-informed decisions. This report is written from the perspective of MRU as a receiving institution for transfer students.

The high-level goal of the project is to begin addressing a gap in Alberta's post-secondary system learner pathway and mobility data: transfer of students between post-secondary institutions. While there is current data on the mobility of students within the system, that data is limited to tracking student enrolments at and between institutions. This project aims to improve the data available by beginning to develop and analyze measures of post-secondary transfer student success. The project is focused on measuring the success of post-secondary transfer students and how transfer students perform in comparison to direct entry students.

This project looked at ways of measuring transfer student success at MRU. The proposed metrics for this report's analysis were developed using a mixed methods approach that consisted of

- applying recommendations for best practices for methodology and parameters for analysis identified in the [literature review](#),
- contextualizing the analysis within information gained from the [environmental scan](#) about MRU, which included informal qualitative data in the form of conversations with targeted representatives from MRU, and
- focusing the report's core analysis and conclusions on a regression analysis of quantitative MRU data that were based on targeted data metrics for analysis of transfer student success in comparison to direct entry students.

## Prior research

The [literature review](#) highlighted a number of key points in regards to transfer student success. In the Canadian context, studies have looked at Statistics Canada data in the form of the now inactive Youth in Transition Survey and the ongoing Postsecondary Student Information System. These data illustrated that reporting on student success from the perspective of an individual institution underreports progress from a system perspective, because a single institution does not generally know whether a student transferred and continued their studies elsewhere, or left the system altogether. In developing success metrics that are fair to both transfer and direct entry students, it has been shown, when selecting key performance indicators, that having consistent definitions and data collection across the system, measuring results (both outcomes and outputs), measuring validity and reliability of data, and metrics, and understandable and transparent performance indicators are important. Existing metrics of student success are criticized for being overly focused on the traditional university learner: first-time, full-time, degree seeking students. In response, the Integrated Post-secondary Education Data System (IPEDS), from the US Department of Education, has recently created new definitions to better encompass both part-time and non-first-time attendees.

The [case study](#) conducted for this report includes both part- and full-time students who were admitted during the study period, pursuing four-year baccalaureate degree programs. Further filtering is done for particular metrics to ensure students had attended long enough to achieve those metrics. For example,

graduation rate at 100% of program length considers the proportion of students who graduate within the expected program length (4 years for baccalaureate degrees). In turn, at least that number of years had to have elapsed since the student was admitted.

This MRU [case study](#) was conducted at a time that the landscape of postsecondary education in Alberta is changing quickly: institutions that formerly were large sending institutions are now completing institutions, changing the nature and dynamics of what it means to be a transfer student. Findings from this report should be considered from the perspective of a snapshot in time when changes are occurring.

For this report, we categorize institutions according to Alberta's six sector model, which includes publicly funded institutions in Alberta (Alberta Advanced Education, 2007). Mount Royal University is categorized in this way as a Baccalaureate and Applied Studies Institution. The other sectors are Comprehensive Academic and Research Institutions, Polytechnical Institutions, Comprehensive Community Institutions, Independent Academic Institutions, and Specialized Arts and Culture Institutions. Some post-secondary institutions in Alberta are outside the six sector model, such as First Nations Colleges, but do participate in Alberta's Transfer and Pathways System and may have transfer students moving to MRU. Further definitions of these sectors are available in [key terms](#).

### **Environmental scan**

The [environmental scan](#) revealed that MRU has performed limited analysis on the success of transfer students to date. This is for a variety of reasons: MRU's change in mandate to become a Baccalaureate and Applied Studies Institution and associated changes in available student educational pathways, the lack of a formal and agreed-upon provincial definition of what constitutes a transfer student, and more urgent analysis on other high priority groups of students such as Indigenous student success, and the uncertainty associated with whether transfer credits will count towards a particular credential prior to admission. Additionally, if a student changes programs, their transfer credits may count differently towards the new program than towards the admission program.

Also highlighted by the [environmental scan](#) is MRU's focus on improving course access to ensure that students are able to take their courses at MRU. This has shown to increase both enrolments and retention. Further, MRU's strategic plan shows that they plan to grow the number of baccalaureate degree options available at the university, providing further educational pathways for transfer and direct entry students.

MRU's ability to split students by transfer status was limited. A proxy indicator was used to determine whether a student was direct entry or transfer. 4 proxies were used: 6, 15, and 24 transfer credits awarded, as well as the previous completion of a degree. These thresholds were chosen as they represent key peaks in the number of transfer credits awarded at the institution, ensuring that students with the requisite transfer credits are captured correctly.

### **Defining transfer students**

In the view of the participants, the existing definitions of transfer in Alberta lack the nuance to successfully define different groups of students studying across more than one institution. One method of defining a transfer student is based on whether a student received transfer credit (aligning with the provincial definition of transferability). Another method is to view transfer as a basis of admission, where transfer students are those surpassing a certain threshold of transfer credits awarded. The [case study](#) in this report is based on the latter concept of basis of admission as the definition for transfer. The case study

performed utilizes transfer as a basis of admission in part to ensure that visiting students, MRU students studying at another institution for a small number of courses, remain coded as direct entry. In order to achieve this, the study uses the thresholds at 6, 15, and 24 transfer credits, as well as the completion of a previous degree, as the cutoffs for determining transfer status. All of these thresholds will label a student who took only 1 or 2 courses outside of MRU as direct entry rather than transfer. Additionally, some of the metrics contain normalization to 24 credits (roughly the end of first year) and 60 credits (roughly the end of second year), allowing a more meaningful comparison of direct entry and transfer students from a common starting point. This study recommends normalizing to 24 credits as a basis for comparison in the future.

### **Case study**

The [case study](#) performed in this report analyzed metrics both with descriptive statistics and using regression analysis. Descriptive statistics are summary level information about a particular group. The descriptive statistics included in this case study are: time to completion, graduation rate, and average credits over time. Regression analysis is used to estimate relationships among variables, with a focus on a dependent variable (for example, GPA at graduation) and multiple independent variables (for example, gender, academic program, and indigenous status). The regression analyses included in this case study are: time to completion and grade point average at graduation. For more information on the metrics used, please see [key metrics](#).

The [case study](#) generally shows strong performance by both direct entry and transfer students. One aspect that facilitates transfer student performance is Alberta's purpose built, transparent, transfer system that does not isolate different types of institutions from one another. This system helps ensure that transfer students are able to complete credentials quickly when changing institutions, while earning credit for their prior academic work.

### **Demographics**

Indigenous students accounted for about 3.7% of direct entry students, and 4.1-4.3% of transfer students using the thresholds of 6, 15, and 24 credits. Using the threshold of having completed a previous degree, the proportion of transfer students declaring as indigenous is about 3.8%.

Females represented about 66% of direct entry students, and 65% of external transfer students using the thresholds of 6, 15, and 24 credits. Using the threshold of completing a previous degree, direct entry remains about 66% female, but increases to 76% female for transfer students.

### **Time to completion**

Time to completion measures the difference, in years, between a starting point and graduation. Using this study's recommended normalized to 24 credit model, direct entry students finished their degrees in 3.3 years, about 5 months faster than their transfer counterparts. Regression analysis on time to completion showed similar results, transfer status explained significant additional variation in time to completion when other factors are controlled for.

### **Graduation rate**

The graduation rate measures the proportion of an admit cohort who has graduated by a certain point in time. When looking at graduation 4 years out from the time a student completed 24 credits (the normalized to 24 credit model), about 64% of direct entry students had finished, compared to about 48%

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of transfer students. When moving out to a 6 year time horizon, the two groups perform similarly, with between 70% and 75% of direct entry and transfer students completing within 6 years.

### **Progression**

This study measured progression in two ways: from the admission term (such as 2010 Fall) to a specific term (such as 2016 Fall), and to a general term number (such as term 7). The former method grouped students into one of four categories: registered, active but not registered (and returned later), graduated, and left. Students falling into the "left" group may have returned or graduated after this study completed, which would have changed their status.

As measured in 2016 Fall, about 40% of direct entry students left the institution compared to 30-34% of transfer students. 54% of direct entry students graduated, compared to 64-69% of transfer students. Less than 10% of students were still studying at the institution.

Progression to a particular registration term, when normalized to a 24 credit baseline for direct entry students, shows that direct entry and transfer students are about equally likely to register up until registration term 9, at which point transfer students begin to stay longer at the institution.

### **Grade point average at graduation and credits enrolled per year**

MRU provided demographic and academic variables including international status, gender, age, program, and admit academic year, which explained 12% of the variance in GPA at graduation. Adding an indicator of transfer suggested that transfer students will graduate with a slightly higher GPA than similar non-transfer students. One possible explanation for this change is that GPAs for transfer students are calculated across fewer courses (because the courses from the sending institution transfer but the grades do not). For example, a transfer student with 30 transfer credits who completed a 120 credit degree would have their GPA calculated across 90 credits at MRU instead of the full 120 across both institutions.

In general, transfer students enroll in about 0.5 credits per term fewer than their direct entry counterparts.

The results of this [case study](#) highlight that the lens through which we consider transfer student success has a significant impact on the measures. For example, when we use an unadjusted form of the time to completion metric, direct entry students take longer to finish their degrees than transfer students. When we shift to normalizing for a 24 credit baseline, transfer students take longer than direct entry students to finish their degrees.

This study aims to help further the conversation around transfer student success metrics in Alberta by beginning to define aspects of transfer student success based on available Mount Royal University metrics. These findings may also help to inform future baseline measures for transfer student success in Alberta. The results of this study, along with the academic literature, suggests the biggest challenges lie in correctly defining who is a transfer student, which cohort to include them in, and finding a dataset that goes back far enough to accurately analyze both part- and full-time student success. The study highlights that transfer students see similar outcomes to direct entry students over similar timeframes when the basis of comparison is normalized to a similar starting point.

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# Introduction

The Alberta Council on Admissions and Transfer (ACAT) contracted Plaid Consulting to perform a comprehensive review of transfer student success metrics at Mount Royal University (MRU). Plaid is a data and analytics consulting agency focused on helping post-secondary institutions, councils, and governments make data-informed decisions.

The high-level goal of the project is to begin addressing a gap in Alberta's post-secondary system learner pathway and mobility data: transfer of students between post-secondary institutions. While there is current data on the mobility of students within the system, that data is limited to tracking student enrolments at and between institutions. This project aims to improve the data available by beginning to develop and analyze measures of post-secondary transfer student success. The project is focused on measuring the success of post-secondary transfer students and how transfer students perform in comparison to direct entry students.

This project consists of 3 main parts: an [environmental scan](#) reviewing existing metrics and perceptions of transfer student success, a [literature review](#) emphasizing recent Canadian research into student success, and a [case study](#) utilizing metrics proposed as part of this project. These elements are brought together to inform the conclusions and recommendations in this report.

This project looked at ways of measuring transfer student success at MRU. The proposed metrics for this report's analysis were developed using a mixed methods approach that consisted of

- applying recommendations for best practices for methodology and parameters for analysis identified in the [literature review](#),
- contextualizing the analysis within information gained from the [environmental scan](#) about MRU, which included informal qualitative data in the form of conversations with targeted representatives from MRU, and
- focusing the report's core analysis and conclusions on a regression analysis of quantitative MRU data that were based on targeted data metrics for analysis of transfer student success in comparison to direct entry students.

The [case study](#) conducted for this report includes both part- and full-time students who were admitted during the study period. The case study includes students in baccalaureate degree programs. Further filtering is done for particular metrics to ensure students had attended long enough to achieve those metrics. For example, graduation rate at 100% of program length considers the proportion of students who graduate within the expected program length (4 years for baccalaureate degrees). In turn, at least that number of years had to have elapsed since the student was admitted.

A number of key terms that define different types of students and institutions are used throughout this report. Please refer to [key terms](#) for further information.



## Environmental Scan

Plaid conducted an environmental scan during May, June, and July of 2017, primarily with Phil Warsaba, Associate Vice President, Enrolment Management & Registrar, Todd Whitehead, Manager, Enrolment Services, Institutional Analysis, and Lanny Anderson, Coordinator Transfer Articulation, Enrolment Services to better understand how transfer and mobility students fit into the broader picture at MRU, areas of concern with transfer and mobility, and what measures are currently in place to measure the success of transfer students.

The environmental scan revealed several areas where transfer and mobility are a challenge for MRU. In the view of the participants, the existing definitions of transfer in Alberta lack the nuance to successfully define different groups of students studying across more than one institution. While the provincial definition of mobility is broad, the definition of transferability relates to whether a student receives transfer credits. Further explanation of these terms can be found in [key terms](#). As a result of these conversations, this study uses basis of admission as the frame of reference for transfer, whereby a student with more than a certain threshold of transfer credits is considered a transfer. In this context, it means that some students who participate in transferability (as a provincial definition) could be coded as direct entry students for this study.

Research by Hossler (Hossler et al, 2012) describes the directions that a transfer can occur: lateral (from one institution to another at the same level) or vertical/reverse (moving from a two-year institution to a four-year, and vice-versa). Conversely, McCormick's definitions (McCormick, 2003) of transfer student subsets including among others: students experimenting with the possibility of moving institutions, students who opt to accelerate their programs by filling in gaps at other institutions, and serial transfers who move through multiple institutions in their studies. These groups of students often have quite different aims, and some can be seen as "swirling" through multiple institutions, never to graduate. Hossler's and McCormick's research is discussed further in the [literature review](#).

In the review, we also discussed challenges around both admissions and course enrolment demand. MRU's strategic plan to 2025, *Learning Together, Leading Together* identifies the goal for MRU by 2025 is to have 80% four-year baccalaureate degrees, 10% diplomas/certificates, and 5% each to degree completion and university entrance (Mount Royal University, 2016). MRU believes that building towards this kind of a program mix will better serve their students and the province, by providing increased access to meet the demands of Alberta learners. This program mix will lead to a planned increase in the number of baccalaureate degrees from 12 to 15, and majors from 33 to 50. This change in program mix and composition at MRU will open additional pathways for both direct-entry and transfer students to pursue credentials at MRU. Such pathways may change metrics such as graduation rates, time to completion, or progression as student behaviour adapts to new opportunities.

One of the unique challenges faced by MRU was that admissions is conducted on a ranked basis - transfer students and direct entry students are evaluated alongside each other, and the best group is admitted. MRU has high turnaway rates for degree programs, which makes deciding on who ultimately gets admission challenging. For example, if the institution had 1,000 seats to admit students to, the top 1,000 students would be admitted as part of a single pool. At some other institutions, the same 1,000 seats are divided, with a percentage being allocated to transfer and a percentage to direct entry. In turn, the pools are evaluated separately, enabling a flexibility not currently possible at MRU.

Like many universities, MRU has had struggles in the past with course access for their students. Common reasons include appropriate classroom spaces, and availability of faculty. The institution is addressing these challenges by offering more seats in courses. This past year and the coming year together, for example, Mount Royal has increased seat availability by approximately 8%. Increasing course availability is intended to support both transfer and direct entry students in completing their credentials in a timely manner.

It is important to note that institutional incentives align best with students enrolling in courses at the institution. Mount Royal University typically sees 2,000 requests each year from students to take a course at another institution, 1,500 of which are degree-seeking students. These requests can be for a variety of reasons, but a large portion relate to students not being able to take the course they want to at the right time. Increasing course offerings allows the student to take more of their required courses at their home institution, making it more realistic for students to plan their academic experience, graduate faster, and ensure consistent academic standards are met. The corollary of this kind of investment is that it actually could mean mobility numbers will go down, as fewer MRU students will feel the need to study at an external institution.

Stemming from this challenge is the need to create a more nuanced definition for transfer, so that studies like this one can be completed. Mount Royal University requested that we look at their students in 3 different ways utilizing the following thresholds to determine whether the student was a transfer student at the time of admission: 6 transfer credits completed, 15 transfer credits completed, and 24 transfer credits completed. These thresholds were chosen as they align well with the distribution of transfer credits awarded to students by MRU (see Figure 2), and because they provide a comparative perspective on whether a student completed a small or large number of transfer courses prior to attending MRU. This study also added a fourth criteria: completion of a previous degree, as this was another way to proxy previous academic experience. These methods are elaborated further in the [case study](#) section.

Lastly, we had limited discussions of the notion of "success" for transfer students with MRU. As the institution does not currently report on related metrics, there is no baseline. As noted in the literature, it can be hard to measure success, as the very concept of success differs for each student depending on their own goals and experiences.

The focus of this report is to begin to define initial aspects of transfer student success based on available MRU metrics. These findings may help to inform future baseline measures for transfer student success in Alberta.

## Key terms

This report uses the Government of Alberta's definitions related to transfer and student mobility, where possible, as provided in the data dictionary for the Learner Pathways System (Alberta Council on Admissions and Transfer, 2017c), and the visiting student definitions as provided by Mount Royal University (n.d.). Terms that are not part of the Government's definitions are also used in this report, including the admit types of direct entry and transfer, which are used in the [case study](#) and analysis related to it. These latter terms are important because they provide a more specific mechanism for defining transfer students than the general definition currently used in Alberta in the Alberta Transfer and Pathways System, which is important in order to begin comparability between transfer and direct entry students.

The key terms employed are:

- Student Mobility (Provincial definition): Refers to a learner's ability to access different learner pathways (routes) during his/her program of study(s) in post-secondary education, including movement into, within, from, or back into post-secondary education. Mobility allows students to earn credits toward a credential at more than one institution, ladder from one credential to another credential, build on foundational learning and high school upgrading to enter post-secondary studies, and/or access to many other learner pathways (Alberta Council on Admissions and Transfer, 2017c).
- Transferability (Provincial definition): Refers to a student's ability to successfully receive transfer credit for an applicable course(s) and/or program(s) when he/she moves between post-secondary institutions and/or between program areas (Alberta Council on Admissions and Transfer, 2017c).
- Admit Types (used in the [case study](#)):
  - Transfer: a student meeting or exceeding a particular threshold of transfer credits at the time of admission. While MRU does have separate admission requirements for post-secondary transfer students, based on the completion of 8 courses at a recognized institution (Mount Royal University, April 10, 2018), students are not currently categorized as transfer or direct entry once they're admitted. A formal definition does not currently exist at MRU. In lieu of an institutional definition, this study compares four different methods of defining transfer status: completion of 6 transfer credits, 15 transfer credits, 24 transfer credits, and completion of a degree prior to attendance at MRU.
  - Direct entry: a student not meeting the criteria for transfer.
    - It is important to note that the direct entry group will include students who have up to the threshold of credits noted in the transfer definition. For example, using the 24 credit threshold to determine transfer means that a student with 23 transfer credits would be considered a direct entry student. Conversely, using the 15 credit threshold to determine transfer means the same student with 23 transfer credits would be considered a transfer student.
- Visiting Student (MRU students visiting another institution): An MRU student pursuing courses towards their MRU credential at another recognized post-secondary institution. To obtain MRU credit, students must have a Letter of Permission (LOP) prior to enrolling in the course (Mount

Royal University, 2018). Requests for LOPs can be limited due to residency requirements (50% of program requirements must be complete at MRU), program requirements, registration activity, and program time limits.

- Note: there are also visiting students from other institutions who attend MRU, and are part of Open Studies during their time at MRU. These students are not included in this report.

In addition to terms related to defining students, a number of terms defining institutional categories are used. For this report, we categorize institutions according to Alberta's six sector model, which includes publicly funded institutions in Alberta (Alberta Advanced Education, 2007). Mount Royal University is categorized in this way as a Baccalaureate and Applied Studies Institution. The six types of institutions are categorized by their academic programs, research activity, and learner focus.

<b>Institutional Sector</b>	<b>Institutions</b>	<b>Academic Programs</b>	<b>Research Activity</b>	<b>Learner Focus</b>
Baccalaureate and Applied Studies Institutions	MacEwan University Mount Royal University	Certificate Diploma Applied Degree Bachelor's Degree (in specified areas) University Transfer Post-Diploma Certificate Graduate Certificate	Applied research and scholarly activity to enhance their instructional mandate.	Learners interested in an education oriented to employment or academic study.
Comprehensive Academic and Research Institutions	Athabasca University University of Alberta University of Calgary University of Lethbridge	Bachelor's Degree Post-Bachelor's Certificate Post-Bachelor's Diploma Master's Degree Post-Master's Certificate Post-Master's Diploma Doctoral Degree Post-Doctoral Certificate Post-Doctoral Diploma University Certificate University Diploma	The University of Alberta, University of Calgary and University of Lethbridge conduct pure and applied research in a wide range of disciplines.  Athabasca University conducts research primarily in the area of distance delivery education.	The University of Alberta, University of Calgary and University of Lethbridge are campus-based institutions serving the needs of learners interested in a comprehensive, research intensive environment.  Athabasca University is an open university that provides education through distance delivery. It focuses on learners interested in open, flexible learning opportunities.
Comprehensive Community Institutions	Bow Valley College Grande Prairie Regional College Keyano College Lakeland College Lethbridge College	These institutions provide a broad range of programs that prepare learners for employment or for further study. Academic Upgrading Applied Degree Bachelor's Degree (in collaboration with a degree-granting institution)	Applied research and scholarly activity to enhance their instructional mandate.	Learners interested in preparatory, career, and academic programming.

Institutional Sector	Institutions	Academic Programs	Research Activity	Learner Focus
	Medicine Hat College NorQuest College Northern Lakes College Olds College Portage College Red Deer College	Bachelor's Degree with Applied Focus Certificate Diploma Journeyman Certificate (using Apprenticeship and Industry Training certification standards) Post-Diploma Certificate Graduate Certificate		
Independent Academic Institutions	Ambrose University Burman University Concordia University of Edmonton The King's University St. Mary's University	These institutions primarily provide liberal arts, science, and education baccalaureate degree programs. They may also offer graduate programs in niche areas. Not all programs provided by these institutions are subject to approval by the Government of Alberta. Other programs may have met the quality assurance of other regulatory bodies.  Approved programs: Academic Upgrading (in specific areas) Baccalaureate Degree (in niche areas) Master's Degree (in niche areas) May also offer: Divinity Degree Post-Baccalaureate Certificate Post-Baccalaureate Diploma	Applied research and scholarly activity to enhance their instructional mandate.	Learners interested in academic programs within a faith-based educational environment.
Polytechnical Institutions	Northern Alberta Institute of Technology Southern Alberta Institute of Technology	Academic Upgrading Applied Degree Baccalaureate Degree (in specified areas) Certificate Diploma Journeyman Certificate (Training Component) Post-Diploma Certificate Graduate Certificate	Applied research and scholarly activity to enhance their instructional mandate.	Learners interested in career and technical programming.
Specialized Arts and Culture Institutions	Alberta College of Art and Design The Banff Centre	These two unique institutions specialize in providing fine arts and cultural programming at the undergraduate, graduate or professional development level. Applied Degree Baccalaureate Degree (in niche areas)	Applied research to enhance their instructional mandate. Alberta College of Art and Design also engages in	Learners interested in the fine arts and creativity. In particular, Alberta College of Art and Design serves the needs of learners interested in career and academic programming.

Institutional Sector	Institutions	Academic Programs	Research Activity	Learner Focus
		Certificate Diploma Master's Degree (in niche areas) Doctoral Degree (in niche areas) Post-Diploma Certificate	scholarly activity.	The Banff Centre serves the needs of learners with prior academic and professional experience.

Some post-secondary institutions in Alberta are outside the six sector model, such as First Nations Colleges, but do participate in Alberta's Transfer and Pathways System and may have transfer students moving to MRU.

Lastly, the term "sending institution" or "transfer institution" is used to refer to the institution a transfer student attended prior to transferring to MRU. "Receiving institution" or "Completion institution" is used to refer to MRU, following a student's transfer.

## Summary of existing metrics from the environmental scan

As of this writing, Mount Royal University has not developed metrics related to the success of transfer students.

Given MRU's shift from a college to a baccalaureate and applied studies institution, there are several current challenges with measuring transfer student success in a systematic way. A transfer definition that would be useful at MRU would include the ability to tell if a student is enrolled full-time at another institution, or just for a few credits. Further, the ability to separate transfers into groups of articulated transfer (such as a 2+2 program) and previously completed post-secondary baccalaureate degree (from MRU or another institution) would help to separate those students who are experiencing post-secondary for the first time from those who have significant experience in it. For this report's [case study](#), all baccalaureate degree programs are studied.

One of the key challenges in establishing such metrics is that it cannot be ascertained with complete certainty that transfer credits will count towards a particular credential until the student graduates. Mount Royal University would like to explore retroactively analyzing graduating transfer student cohorts at a future junction, but the institution has other priority groups for further analysis at this time.

MRU is also a member of the Consortium for Student Retention Data Exchange, but has found that the restrictive cohort definitions limit the number of students who can be currently measured using Consortium metrics (see the [literature review](#) for further detail on these types of limitations).

## Literature Review

Incoming transfer students account for a significant student population at many of Alberta's post-secondary institutions (PSIs) and are key to ACAT's role in providing oversight for "learner pathways and mobility throughout the advanced learning system" (Alberta Council on Admissions and Transfer, 2017a). While the number of students continuing in publicly funded institutions grew during the period of 2004-2013, the number of students demonstrating system mobility by continuing at a new institution declined over the same period (Alberta Council on Admissions and Transfer, 2017b). Facilitating more seamless transfer processes for Alberta students could influence these trends by ensuring students are able to obtain appropriate credit for prior learning and able to move between institutions and sectors as their educational plans change. In the historical context, one of the roles of college (the sending institution) was to prepare students for university transfer, often in two year programs that laddered into four year programs at the university (the receiving institution). The landscape has changed considerably since then: there are more students, a greater variety of institutions to choose from across Alberta's Six Sector Model for Advanced Education (Alberta Advanced Education, 2007), and different societal needs for credentials. Enrolment patterns are changing as students are seeking to move fluidly from one sector to other sectors, and "a new view may prove useful, one in which students are the unit of analysis and institutions are viewed as stepping stones along a diverse set of educational paths" (Hosler et al., 2012).

For this report, we categorize institutions according to Alberta's six sector model, which includes public institutions in Alberta (Alberta Advanced Education, 2007). For further definition of these sectors, see [key terms](#).

This literature review is further divided among two major themes: Canadian transfer student success research, and research comparing direct entry and transfer student success.

### Canadian transfer student success research

Research on student persistence in the Canadian context has grown in recent years. Baseline indicators from within individual academic institutions tell one aspect of the story. More recently, researchers have begun utilizing longitudinal surveys, administrative, and earnings data from Statistics Canada: the Youth In Transition Survey (YITS), and the Postsecondary Student Information System (PSIS), and tax records.

#### Baseline persistence within an individual institution

Prior to work involving the YITS or the PSIS, most research has focused on persistence within a single institution (Parkin & Baldwin, 2009). This research showed that around 60% of students could be expected to complete their studies (Grayson & Grayson, 2003). Highlighting this point, Martinello (2008) found that 40% of students at the bachelor's level left or changed their first program of study, aligning with Gilbert's (1991, as cited in Martinello, 2008), finding that 42% of students enrolled full-time in the fall of 1985 in several Canadian universities dropped out after 5 years had elapsed; he further estimated that 10% of the initial cohort transferred to another institution.

## Youth In Transition Survey

YITS "is designed to examine the patterns of, and influences on, major transitions in young people's lives, particularly with respect to education, training and work" (Statistics Canada, 2011). The YITS was developed by Human Resources and Skills Development Canada and Statistics Canada, in consultation with provincial and territorial ministries responsible for labour and education. The survey measures major transitions in young people's lives encompassing formal educational experiences, most labour market experiences, achievement, aspirations, expectations, and employment experiences. YITS consists of two cohorts: Cohort A (herein referred to as YITS-A) were born in 1984 and were aged 15 at the start of the survey in 1999; and Cohort B (herein referred to as YITS-B) were born between 1979 and 1981, and were aged between 18 and 20 in 1999. Follow up surveys of these cohorts were conducted every two years, in 2002, 2004, and 2006, and 2008. The initial sample size for YITS-A was 38,000 while YITS-B was 29,000.

Because the YITS (for both cohorts) is both longitudinal and focuses heavily on tracking individuals' educational experiences, academic backgrounds, aspirations and expectations, it is a very strong tool for analyzing student persistence (Finnie and Qiu, 2009).

Finnie, Childs, and Qiu (2010) calculated transition rates in Ontario focusing on four broad statuses for each student in each year: Graduate, Continuer (in the same institution), Switcher (began studying at a different institution), and Leaver (left PSE without graduating, or no longer in the data file for this regional study). Because the YITS-B dataset contains information not only on whether the student graduates from their first program of study, but any program, they found a number of important differences between their results and research into persistence: nearly 80% of students either obtain a degree or continue to be enrolled in the post-secondary system five years following entry, with 71% graduating in 5 years and 6% who are still studying. This 71% compares to 58% if only the initial program started were being measured. Further, they note that a significant number of students follow non-traditional pathways, including switching programs, taking breaks, and moving in and out of PSE; including these students shows higher persistence rates - "while 26.9 of Ontario college students leave their first PSE program by the end of the first year, over a third of these (10.1 percent of the total) switch immediately to another PSE program" (Finnie, Childs, & Qiu, 2010 p.29-30), with 23.5% returning within a year of leaving, many at the same institution in a new program.

These results are further enforced by Lambert, Zeman, Allen and Bussiere (2004) using the YITS-B dataset for the first two cycles: 15% of those who had enrolled in PSE left without completing their program. This research was followed up by Shaienks, Eisl-Culkin, and Bussiere (2006) which showed 15.7% for the third cycle.

Finally, a study by Martinello (2008) showed that 50-60% graduated from the first program they started, with an additional 10-12% completing a credential in their second program, while 12-13% were still studying in their second program. Martinello additionally showed that only 8.7% of students left post-secondary entirely, once transfers to new programs or institutions were taken into account.

The YITS also has limitations: the sample size isn't large enough to analyze certain pathways at a more granular than national level, and it lacks specific information identifying post-secondary institutions, as well as selection and response bias (Finnie & Qiu, 2009). The YITS is also now inactive, and has not been replaced.



## Statistics Canada's Postsecondary Student Information System

Statistics Canada's Postsecondary Student Information System (PSIS) "collects information pertaining to the programs and courses offered at an institution, as well as information regarding the students themselves and the program(s) and course(s) in which they were registered, or from which they have graduated" (Statistics Canada, 2017) for all public post-secondary institutions in Canada. PSIS is an annual submission. There is no sample associated with PSIS - it contains the population for the institutions that participate.

Finnie and Qiu (2009) utilized the PSIS to analyze student persistence across Atlantic Canada at all academic levels: college, bachelor's, master's, doctoral, and first professional degrees, with an emphasis on college and bachelor's students due to the sample sizes and related policy concerns. The Atlantic region was chosen in part because it had near universal participation among public institutions for the reporting period between 2001 through 2004. The researchers linked individual student records both within each reporting year (where a student enrolled in multiple programs) and over time, allowing them to uniquely identify and track students pathways in PSE. Finnie and Qiu focused on four broad statuses for each student in each year: Graduate, Continuer (in the same institution), Switcher (began studying at a different institution), and Leaver (left PSE without graduating, or no longer in the data file for this regional study).

One of the key reasons for studying persistence at a regional level, rather than from the perspective of an individual institution, is that individual institutional data doesn't provide insight into how students switch institutions, which causes an overestimation of the number of leavers.

The major findings from Finnie and Qiu (2009) on basic persistence rates were:

- The first year "dropout rate" at the university level, for 17-20 year olds beginning their first program, was 20.2%, at the individual institution level.
- Some of those noted as "leavers" are in fact "switchers" changing institutions: 5.1% in absolute terms. In effect, this leads to substantial bias in the leaving rates for PSE when a single institution is analyzed. This means that "true" leavers were only 15.1% at the university level (22.6% at the college level, where switching institutions was negligible).
- Switching and leaving rates are considerably lower in the second year as compared to the first with the leaving rates declining from 15.1 % to 11.7%, and switching rates declining from 5.1 % to 4.2%.
- Expanding the list of programs to include short courses, language training, etc. increases the number of students who would be considered switchers, resulting in a corresponding drop to the leave rate to 13.8%.

When comparing college students to bachelor's students they found that leaving rates were higher for college students at 22.6% versus 15.1% for bachelor's students in the first year. The switching rates were almost negligible for college students but were substantial for bachelor's students. The PSIS data also showed that the leaving rate increases substantially with age for bachelor's students, whereas switching rates decline with age. For college students, leaving rates are slightly lower for older students and switching rates remain negligible.

Comparing leaving rates across genders the data showed that men leave at much higher rates than women at the university level (28.4% versus 21.9% by the end of year 2). Conversely, women showed slightly higher switching rates than men. The patterns by gender at the college level are almost identical by the end of year 2 (33.1% for men and 33.6% for women). The authors underscore the important implication of these findings that since men enter university at substantially lower rates than women, and are also less likely to persist in their studies, the resulting gender differences in final graduation rate will be skewed even more than the access rates commonly looked at would indicate. When leaving and switching rates are combined (the “quit rate” from the individual institutional perspective), the gender differences in persistence in PSE are clearly understated.

Finnie and Qiu (2009) also found that 25% of bachelor's leavers return to PSE over time, with about half of these returning to the same institution, and a quarter staying at the same level but changing institutions (it should be noted that "level" is not necessarily the same as Alberta PSE sectors). 11.5% of college leavers return to their studies, with most returning to the same institution. This points to the conclusion that overall leaving rates are substantially overstated when these “leaver-returners” are not taken into account. This is referred to as the “stop-out” phenomenon.

It is possible that Finnie and Qiu (2009) study underestimates continuance rates, as it was limited geographically to just records from Atlantic Canada, meaning any student who moved to an institution in another province would be considered a leaver.

The authors concluded that the PSIS data provides a useful perspective on persistence in PSE which will be of interest to those concerned with student pathways.

### **Post-graduation earnings**

The Educational Policy Research Initiative (EPRI), conducted research on the post-graduation outcomes of PSE graduates by "constructing and analyzing a dataset linking 14 Canadian PSE institutions' administrative data with tax data [from 2005-2013] held at Statistics Canada" (Finnie, Dubois, & Miyairi, 2017, p.4). The students were grouped by whether they were direct entry from high school or transfer students. The study grouped students on the basis of direct entry (DE), or non-direct entry (non-DE, i.e., transfer). These groups were further divided according to age at graduation: younger and older, with the age-at-graduation cutoff being 23 for diploma graduates, and 24 for degree graduates.

For diploma graduates, younger and older DE groups as well as the younger non-DE group showed substantial jumps in earnings following graduation, while the older DE group showed a more modest increase.

For diploma graduates, the younger DE group saw the largest jump in salary, moving from below \$10,000 prior to PSE, to just under \$30,000. The older DE group earnings were mostly flat at around \$20,000. Of the non-DE groups, the younger group saw a large uptick from below \$10,000 to around \$30,000, while the older group showed a modest increase of about \$4,300 compared to their pre-PSE salary. However, the older non-DE group also exhibited an earnings decline in the two years prior to PSE, unlike the other groups - when this is accounted for, the increase is about \$12,000 relative to two years prior to PSE (Finnie, Dubois, & Miyairi, 2017).

For degree graduates, younger and older DE groups as well as the younger non-DE group had pre-PSE salaries of approximately \$10,000 and post-PSE salaries of approximately \$30,000, while the older non-DE group had a pre-PSE salary of \$30,000 and a post-PSE salary of \$43,000 (Finnie, Dubois, & Miyairi, 2017).

Hango (2010) also looked at earnings following study in PSE, but focusing on the comparison between 1-2 and 5-6 years post-graduation for students who took a direct route to post-secondary or an indirect route. In this study, direct entry students showed an average lift between years 1-2 and 5-6 following graduation of 10.25% whereas those who followed an indirect route to PSE showed a lift of nearly 16%.

More recently, the Government of Alberta published the Labour Market Outcomes of Graduates of Alberta Post-Secondary Institutions in February 2018. This report did not directly compare direct entry to transfer students, but did highlight that Alberta post-secondary graduates see significant increases in income following graduation, though this varied by credential and field of study. The study also noted that students who graduate in a recession year may have lower earnings, both initially and in the long run, compared to those who graduate in non-recession years. Further, field of study is just as significant as credential type in predicting earning potential, though higher level credentials usually lead to higher income (Government of Alberta, 2018a). The Government of Alberta has also made earnings data available through the ALIS career, learning, and employment portal (Government of Alberta, 2018b).

## Research comparing direct entry and transfer student success

Beyond the examples identified above, there is limited Canadian research into frameworks for effectively comparing direct entry and transfer student success on [key metrics](#).

In the Canadian context, British Columbia has a provincial level data exchange initiative, the Student Transitions Project (STP), that brings together data from the secondary and post-secondary systems and reports on outcomes (Government of British Columbia, April 4, 2018). BC's STP provides annual high level reporting and newsletters containing highlights of transfer patterns across all types of institutions as it contains data from research-intensive universities, teaching-intensive universities, colleges and institutes. Of particular relevance to this report is the ability to see transfer patterns across different institutions. We note that the STP is distinct from BC's Central Data Warehouse (CDW) which does not include BC's research universities. The Maritime Provinces Higher Education Commission (MPHEC) reports publicly on student progress and outcomes for institutions in New Brunswick, Nova Scotia, and Prince Edward Island. As a joint commission, MPHEC can report both whether a student has persisted or completed at a particular institution and whether they have persisted or completed at an alternate maritime university (Maritime Provinces Higher Education Commission, April 4, 2018). Ontario's universities use a 7-year graduation rate for a cohort of full-time, first-time, first-year students who were attending in the Fall semester (Council of Ontario Universities, 2017). Ontario's colleges use a similar metric: certificate and diploma programs are based on the percentage of students who graduated within twice the time for standard program duration, while for degree students it is based on seven years (Higher Education Quality Council of Ontario, 2017). Previously, Ontario's colleges used a reverse cohort model, where graduation rate is based on the number of "students who complete diploma/certificate programs within a minimum time frame expressed as a percentage of entering students", which the colleges found to be highly problematic as it overinflated results for some institutions and underinflated results for others

(Donner and Lazar, 2000). Newfoundland and Labrador measures its graduation rate for the college by taking the number of graduates per year as a percentage of the total entrants within expected program duration (Donner and Lazar, 2000). The Pan-Canadian Consortium on Admissions and Transfer (PCCAT) commissioned a survey and report on student mobility across Canadian jurisdictions, which touched briefly on transfer student performance by noting that many institutions do not keep a historical record of historical averages of performance measures at a point in time (such as GPA at end of first year), but tend to keep better records of completion so could more readily calculate historical graduation rate (Heath, 2012).

In the past decade, there have been significant efforts to improve the reporting of transfer student success. For example, British Columbia developed KPIs that aim to show that system goals have been achieved. These principles guided the selection of the KPIs (Donner and Lazar, 2000):

- Consistent data definitions and collection across college system;
- Emphasis on measuring results (outcomes and outputs);
- Valid measures of what they are intended to measure;
- Reliability over time; and
- Clear, understandable, and transparent.

## Types of transfer students

Transfer students come from a variety of different backgrounds. The literature notes that students can transfer in several directions and that there are different subsets of transfer students.

Hossler et al. (2012) note that transfer can occur in several directions:

- Lateral transfer: a student moving from one institution to an institution in the same sector, such as from NAIT to SAIT.
- Traditional, or vertical, or upward transfer: a student moving from a two-year institution to a four-year institution, such as from moving from a regional college to a university.
- Reverse transfer: a student moving from a four-year institution to a two-year institution, such as moving from a university to a regional college.

McCormick (2003) identified several subsets of transfer students:

- Trial enrollers: students experimenting with the possibility of transferring to another institution.
- Special program enrollers: students doing most of their work at their home institution who also take advantage of unique programs offered at other institutions.
- Supplemental enrollers: students enrolling at an additional institution for a term or two to supplement or accelerate their program. This often allows students to take courses not available at the home institution, reduce expenses by enrolling where costs are lower, or make up for a shortfall in credits. Note that this can also be used strategically: a student fearing a low grade could take a course elsewhere to ensure it isn't included in the GPA of their home institution.
- Concurrent enrollers: students enrolling in courses at multiple institutions simultaneously.
- Consolidated enrollers: students who take a substantial share of their coursework at multiple institutions, but still meet their home institution's residency requirements.
- Serial transfers: Students who make one or more intermediate transfers on the way to a final transfer destination.
- Independent enrollment: students pursuing work unrelated to their degree program who transfer no credits (professional certifications and licensing are examples).

With such a wide variety of transfer students and directions they can take, it can be difficult to accurately portray success of these students. Many traditional metrics of student success focus on key completion related elements including graduation rate, time to completion, and retention rate. Typically, graduation rate is viewed in the context of some percentage of “normal” program completion - the Consortium for Student Retention Data Exchange (CSRDE) and the Integrated Post-secondary Education Data System (IPEDS) both use 150% of normal time, which most often translates into reporting on a six-year graduation rate for students in undergraduate degree programs, while Ontario’s universities use a seven-year graduation rate. Time to completion is nominally the time elapsed between when a student begins study at an institution and when they complete a credential. Retention rate doesn’t have a universal definition, but is often reported as the percentage of first-year students retained to second year or third year. Many institutions participate in data exchange consortia to allow comparison of these metrics to peer groups, and in some cases be able to report on outcomes for students who have left the institution but continued to study elsewhere.

The two largest exchange consortia in this realm are CSRDE and IPEDS. The CSRDE includes nearly 400 institutions, of which 36 are in Canada, including the Universities of Alberta, Calgary and Lethbridge and Mount Royal University (Consortium for Student Retention Data Exchange, April 4 2018). CSRDE is based on data submitted by member institutions. IPEDS has more than 7,500 members exclusively located in the United States and its territories in the Pacific Ocean and Caribbean Sea (National Center for Education Statistics, April 4, 2018). Both the CSRDE and IPEDS report on graduation rate, time to completion, and retention rates, and are based on submissions provided by member institutions through survey instruments. Generally, the data is comparable but not identical, with CSRDE reporting being slightly faster than the equivalent IPEDS reporting (Consortium for Student Retention Data Exchange, 2016).

Criticism of both CSRDE and IPEDS reporting on student success tends to revolve around how cohorts of students are defined. Both initiatives currently base their reporting on an incoming cohort of first-time, full-time, degree seeking students. This definition excludes significant subsets of the student population, in particular part-time students and transfer students, which serves neither the sending nor receiving institutions well (Horsch, 2008; McLaughlin et al., 2016; Cook, 2012). For example, in Massachusetts, nearly two-thirds of community college students do not meet the criteria to be included in the IPEDS graduation rate (Massachusetts Board of Higher Education, 2007); a more extreme example can be found at Marylhurst University in Oregon “a four-year institution that has been recognized for serving adult students, reportedly had a 23 percent, six-year completion rate – namely because a very small subset of its students (just one percent) fall in the first-time, full-time cohort used to calculate completion rates.” (U.S. Department of Education, 2015). This exclusion of subsets of student population consequently under-reports student achievement as it does not properly account for “an increasingly mobile student population” (Student Achievement Measure, 2013a). A further criticism of IPEDS data is how it categorizes institutions: any institution offering four-year baccalaureate degrees is deemed a four-year institution, even if four-year programs are a very tiny part of their mission (Ma and Baum, 2016). Additionally, it is felt that the survey instruments used by IPEDS are not nimble enough to keep pace with the changes occurring in the higher education landscape (Engle, 2016). Further, even those students who originally met the criteria can end up outside the reporting boundaries: using the 150% of “normal” time as a graduation rate would be too short of a time window and ultimately exclude students who opted to study part-time later in their careers as a result of life changes, students who participated in additional non-credit training such as literacy or numeracy work, or those who repeated too many courses. Some studies

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have recommended including “full-time only”, “part-time only”, and “mixed” categories for reporting (Soldner et al., 2016).

The same challenges exist when discussing persistence metrics like retention rate due to the cohorts being defined in the same way. However, there “is still no universally accepted definition or measurement (operationalization) of retention. This makes comparisons very difficult” (Van Stolk, et al. 2007).

There is also criticism over using and publishing metrics: some suggest that institutions actively manage their cohorts to improve their graduation rate by deferring potentially less-qualified students to a non-Fall start term (which isn’t currently counted by IPEDS) (Soldner et al., 2016).

When defining metrics, it is important to keep in mind that many are used by outside organizations. For example, the College Scorecard is a public facing website that “provides students and families the critical information they need to make smart decisions about where to enroll for higher education” (U.S. Department of Education, 2013) and is part of the accountability initiatives of the US Department of Education. Ranking agencies such as Times Higher Education World University Rankings, QS World University Rankings, and Maclean’s University Rankings Canada routinely consider student success-related metrics as part of their publication. Prudence in determining where new metrics could be used by external agencies reduces the chance that the metrics are used incorrectly.

Notwithstanding the above criticisms, the use of the traditional first-time, full-time, degree seeking definition allows for easy comparison of results across programs both within institutions and across the post-secondary sector. Additionally, the CSRDE members began studying the inclusion of transfer students in 2005, finding that the tremendous variation in transfer student characteristics was a challenge to be overcome. Out of this process, the CSRDE did create a data sharing protocol aimed at including transfer students who had completed at least one year of community college (McLaughlin et al., 2016).

IPEDS also includes a transfer-out rate for those institutions who have a core transfer mission, which is reported separately from graduation rate (National Center for Education Statistics, 2017). Reporting this transfer-out rate is optional for non-transfer institutions, however, and some studies found it to be underreported because institutions have limited access to data at other institutions (IPEDS Technical Review Panel, April 4, 2018).

In response to much of this criticism from institutions and in the research literature, IPEDS expanded its data collection for the 2016 cycle to include transfer and part-time students in its completion rates (U.S. Department of Education, 2015). Consequently, the new IPEDS now consists of 4 Outcome Measure Student Groups beginning with the 2015-16 and 2016-17 cohorts: First-Time Full-Time (FTFT) - similar to what has been collected since the 1990s, First-Time Part-Time (FTPT), Non-First-Time Full-Time (NFTFT), and non-First-Time Part-Time (NFTPT). For these expanded cohorts, IPEDS now reports awards conferred at 6 and 8 years following graduation. If the student did not graduate, they are reported as still enrolled, transferred, or unknown (Jones, 2017).

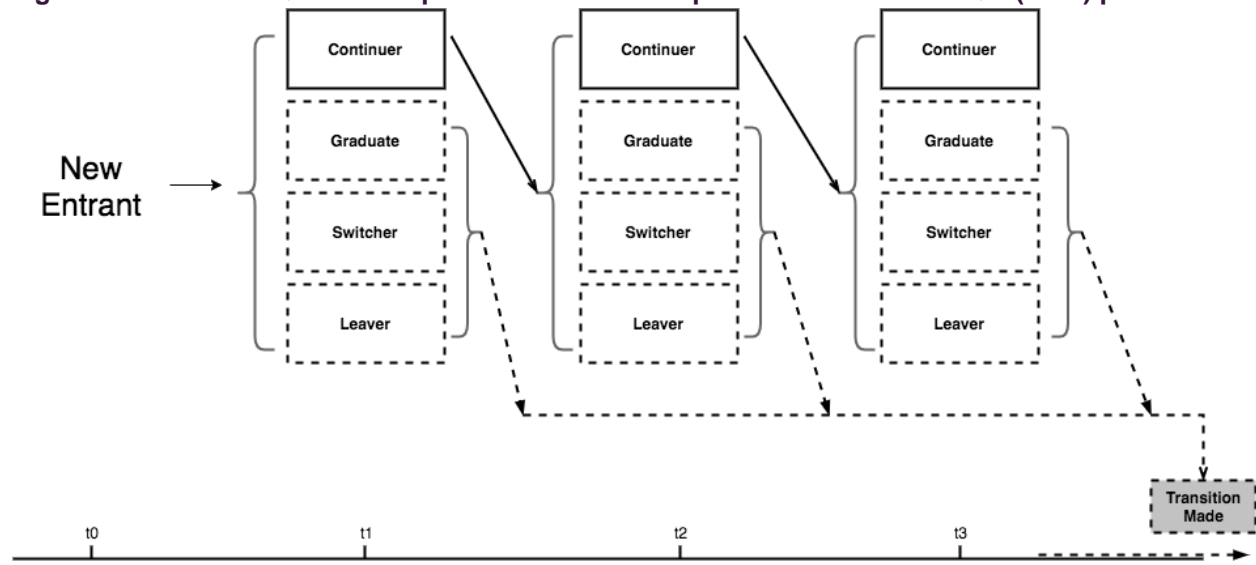
# Conceptual framework: student transitions

This report will focus on transfer student populations, but some of the measures developed could also be useful to measure the success of other types of students not traditionally captured by success metrics (for example, part-time students who were not transfer students). MRU students pursuing baccalaureate degree programs both full-time and part-time are included in the [case study](#), while students in other credential types are not. Additionally, many of these measures will work for programs that are not four-year degree programs; however, the challenge then becomes making meaningful comparisons for benchmarking purposes - is it reasonable to compare a two-year program to a four-year program? The answer will depend on the context in which the institution operates, and the mix of programs available.

The [case study](#) utilizes the conceptual framework developed by Finnie and Qiu (2009) called a "spell time" approach, whereby time was represented in event-years defined as the number of years elapsed since the student began studying. Finnie and Qiu focused on four broad statuses for each student in each year: Graduate, Continuer (in the same institution), Switcher (began studying at a different institution), and Leaver (left PSE without graduating, or no longer in the data file for this regional study). Because the case study data is limited to a single institution, the Switcher status will be reported as Left.

Finnie and Qiu's original model is shown in Figure 1:

**Figure 1: Finnie and Qiu's conceptual framework. Adapted from Finnie and Qiu (2009) p.23.**



For the purposes of this research, the term "Registered" will be used in a similar way to Finnie and Qiu's "Continuer", but note there may be continuing students not registered in courses at the university that this study will otherwise consider as a leaver. Similarly, we will use "Graduated" to represent students who complete their credentials. Because this is a single institution study, "Left" will encompass both "Switcher" and "Leaver". Additional definitions used in this report can be found in [key terms](#).

## Student success metrics

In order to accurately measure student success, particularly for non-traditional students, we utilized the following principles as identified by the American Institutes for Research principles for the inclusive measurement of student outcomes (IMSO) (Soldner et al., 2016):

1. Include all entering students, without restriction;
2. Include the outcomes those students achieve at all known institutions;
3. Collect yearly measures of student outcomes, measured from the perspective of the student, and report those outcomes yearly.

IMSO holds that it is important to include all students in measures of persistence and completion because it would provide more comprehensive information to students, educators, and policymakers. The report also notes that the concept of measuring enrolment intensity (full-time vs. part-time) is becoming timeworn: as students enroll at an increasing number of institutions for a smaller number of credits, this measurement becomes increasingly meaningless (Cook, 2016). IMSO's yearly outcome reporting suggests presenting both completion and persistence rates for every year of a six-year period, regardless of program. Further support for the first two principles can also be found in *Answering the Call: Institutions and States Lead the Way Toward Better Measures of Postsecondary Performance*, a research report written for the Bill and Melinda Gates Foundation (Engle, 2016).

Research demonstrates that adding an additional cohort of transfer students who have completed 30-credit hours at a transfer institution is sufficiently reliable and valid as a predictor of student success (McLaughlin et al., 2016).

Based on both the [literature review](#) and the insight gained from the [environmental scan](#), we propose studied the following metrics at Mount Royal University:

- Time to completion: number of elapsed years between when the student began studying and graduation.
  - Descriptive statistics
  - Regression analysis
- Graduation rate at the following points in time relative to expected program completion times:
  - 100% and 150%.
    - Here we note that longer than 200% or more would be optimal, particularly for students who are part-time, but with data starting in 2010, this is not realistic at this time.
- Progression and retention (percentage of students continuing at the institution):
  - Progression over time (registered, left, or graduated).
  - Retention to student registered term number (ie: 1st term, 2nd term, 3rd term, etc)
- GPA at graduation regression analysis
- Average credits taken over time

The regression analyses makes further use of demographic and academic information provided and, where applicable, metrics will be further divided by the academic and demographic information provided for the [case study](#): student faculty in first registration term, GPA for each registration year, full / part-time status, demographic information (national status, Indigenous status, gender).



Where these metrics diverge from the common metrics used by organizations like the CSRDE and IPEDS is that they will focus on all students, rather than just first-time, full-time, degree seeking students. This approach enables some opportunities but also some challenges. The opportunity is that institutions can gain a stronger understanding of populations not well served by the traditional student success metrics, better aligning with the principles of IMSO. The challenge is whether grouping these types of students together is perceived as fair or accurate. For example, because part-time students and full-time students behave so differently, it may be more prudent in the institutional context to separate part-time and full-time students in certain completion and project metrics.

The metrics used for the [case study](#) in this report are further defined in [key metrics](#).

An additional challenge related to this study is that we are relying on institutional rather than regional or system data and therefore student success and persistence will be underrepresented due to the nature of students transferring to different institutions, or taking a longer break from their studies as noted by Finnie and Qiu (2009).

## Case study

### Methodology

This project looked at ways of measuring transfer student success at MRU. The proposed metrics for this report's analysis were developed using a mixed methods approach that consisted of

- applying recommendations for best practices for methodology and parameters for analysis identified in the [literature review](#),
- contextualizing the analysis within information gained from the [environmental scan](#) about MRU, which included informal qualitative data in the form of conversations with targeted representatives from MRU, and
- focusing the report's core analysis and conclusions on a regression analysis of quantitative MRU data that were based on targeted data metrics for analysis of transfer student success in comparison to direct entry students.

The analysis included baccalaureate degree program students spanning the 2010/2011 academic year until the 2016/2017 academic year, including direct-entry and transfer students studying full-time or part-time. It excludes open studies students and students pursuing credentials other than baccalaureate degrees.

### Data transformation summary

Mount Royal University provided Plaid with a dataset containing 114,689 anonymized student enrolment records by term, representing 20,238 unique students pursuing degree programs at MRU. The case study period started in 2010 Fall, and ended in 2017 Summer. The data provided excludes students in Open Studies and the University Entrance Option.

For this case study, we took the base data provided by MRU and transformed it into a number of database tables that could be utilized specifically for student success type analysis:

- `term_tbl`: a list of all terms included in this study
- `student_term`: this table houses enrolment records for each student in each term they were enrolled.
- `student_program`: this table houses records for each student at the time of admission. This table also houses bio-demographic information, where provided, including gender, indigenous status, and national status.
- `student_progression_term`: this table brings together information from `term_table`, `student_term`, and `student_program`. It ensures that reporting on student status from the time of entry until 10 years in the future is conceptually possible (though limited by length of the dataset)

Data was transformed primarily using Safe Software's FME, data analysis was primarily conducted in Tableau, and regressions were run in PyCharm CE using an Anaconda-based Python 3.6 Jupyter installation and the `numpy`, `scipy`, and `scikit-learn` Python modules. These tables, and the transformations required to build them, are further described in the sections that follow and in the [Appendix](#).

In order to enable our data analysis, we recoded the MRU data so that it could be used for further analysis as consistently as possible with the case studies on three other institutions (the University of Alberta, the University of Lethbridge, and MacEwan University) that Plaid completed for ACAT. Generally, this consisted of the following processing of the data:

- Admit type was created based on transfer credit thresholds at 6, 15, and 24 transfer credits. An additional category was created for those who completed a previous degree.
- Demographic variables: Gender was used as presented. Domestic/International was renamed to National Status and represented as D (Domestic), I (International), or U (Unknown). Indigenous status was assigned a flag of Y (Yes) or N (No).
- Academic Program type information was assigned to the field Program based on the field Degree code provided by MRU.
- Admit term, current term, last enrolled term and completion/graduation term were recoded to a term ID number. Terms ending in 01 represents Winter, 02 represents Spring, 03 represents Summer and 04 represents Fall. Graduation terms were also recoded to be the end date of the students last enrolled term to best ensure a fair representation of time to completion regardless of convocation ceremony date. Term end dates are represented as April 30 for all terms ending in 01, June 30 for terms ending in 02, August 30 for all terms ending in 03, and December 30 for all terms ending in 04. These calculated term end dates were used in calculating the number of years from the start of the admit term to graduation.
- A graduated flag (Y/N) was calculated based on the presence of a completed MRU degree. The graduation date was proxied based on the end date of the student's last enrolled term.
- Cumulative earned credits were calculated based on term credits passed.
- Plan type proxied as "Degree".
- Term credits passed was used as the indicator of how many credits the student had completed, and forms the basis of cumulative earned credits.
- A calculated number of registered terms was created for each student for use in progression metrics.
- A status variable was created, which includes 4 possible statuses: registered, active but not registered (and returned later), graduated, and left. If the student is registered in courses, status is set to "registered". If the student is enrolled in a subsequent term but not the current term, they

will show as "active but not enrolled". If the student has graduated and is no longer registered, they will show as "graduated" starting from their graduation term. If the student is neither registered nor graduated then they will show as "left".

## Limitations

This [case study](#) is limited in several ways, and all results should be considered in the context of these limitations. Key limitations include the length of the study period, meaning that certain metrics, such as graduation rate within 200%+ of expected program completion time are not possible. Additionally, the study excludes anyone who was admitted prior to the start of the study period, as it was not possible to determine student behaviour between the admission term and the start of the study. Additionally, over the course of the study period, MRU did not consistently label a student as either direct entry or transfer in their information systems, requiring us to determine this label based on transfer credits awarded to the student. Further, not all transfer credits will be applicable to a student's chosen program of study at MRU.

This study also does not have full insight into institutional rules around course repeats. It is possible that GPAs provided as part of the base data could change if a student repeats a course after the end of the study period. Additionally, the cumulative grade point average provided are as of the end of the previous term, meaning any figures referring to GPA at graduation exclude the impact of the final term of enrolment. Further, this dataset reflects only degree-seeking students in all programs, excluding certificates/diplomas, open studies, and university entrance studies. Lastly, there are rules applied to each of the metrics in the name of comparability (within the institution but not outside) and reasonability, which are further documented in each of the [key metrics](#) of the study. By way of example, a graduation rate at 150% of expected program completion time requires that students have attended the institution for at least 6 years for degree programs. This limits the number of admission cohorts that can be assessed in the study period to only the first one to two cohorts. In the case of students classified as transfer, these rules limiting which cohorts can be included in the [key metrics](#) make the sample size quite small relative to the full dataset (for example, Table 2 shows the impact of filtering to just those students admitted within the study period, which reduces the dataset from more than 20,000 students to just over 8,500. Further filtering occurs within individual metrics, which reduces this sample further) which may make the conclusions drawn here not representative of the fuller experience at MRU.

Finally, this study can only look at the time a student spent completing a degree at MRU, rather than looking at their entire time working towards that credential. In the case of transfer students, in particular, this study does not include the time elapsed completing the courses that are eventually awarded transfer credit at MRU. Within this study we use credit normalization (discussed below) to provide a fair comparison of the time at MRU, but other methods would be required to look at total time towards a credential.

The [future research recommendations](#) section discusses some possible solutions to these limitations.

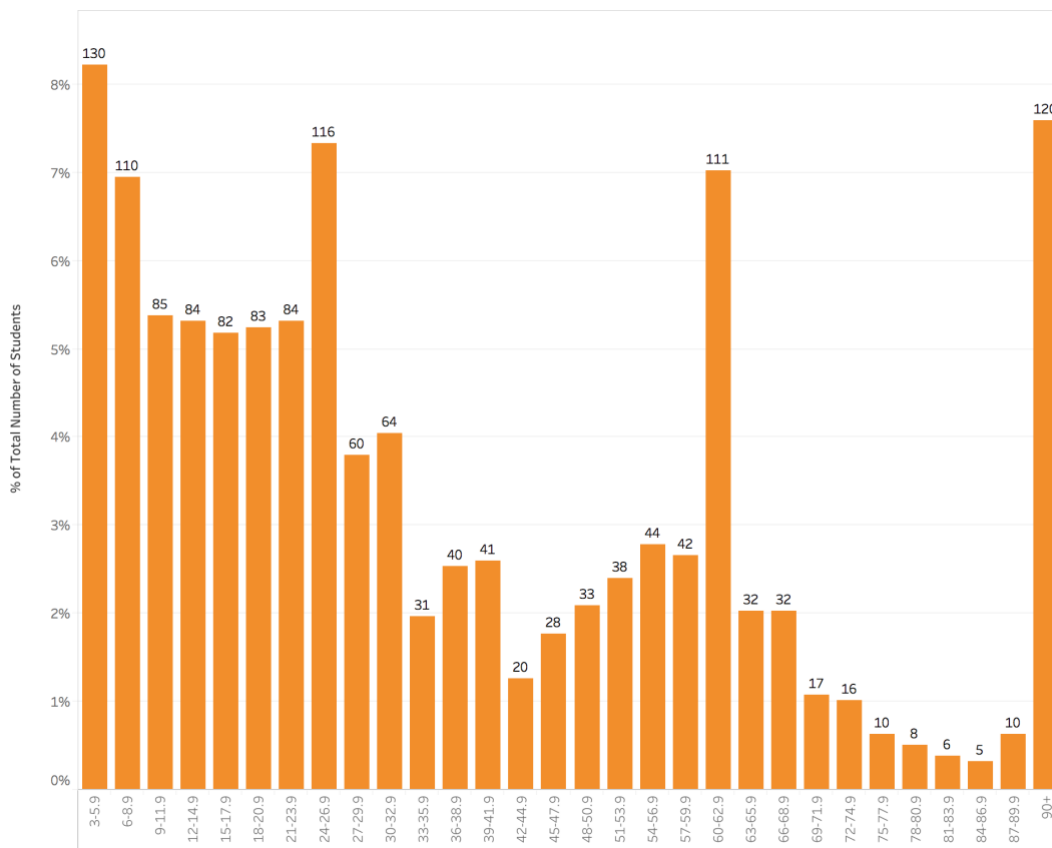
## Credit normalization

In several of the [key metrics](#) for this study, we have employed normalization to provide a fairer comparison between direct entry and transfer students. Where applicable, three versions of a metric are presented: unadjusted, normalized to 24 credits, and normalized to 60 credits. In the normalized versions, direct entry students are assessed from the time that they amass the requisite number of credits within the institution and compared with transfer students with similar number of transfer credits.

To determine the appropriate number of credits to normalize with, we used a combination of analysis of the transfer credits presented in the data (see Figure 2), and conversations with the institution to ensure that the choices made in this research aligned with their own internal methods. The spread of transfer credits presented in the data is shown in Figure 2 below. The figure shows that the most common number of transfer credits (among those with transfer credit) in this dataset. Of particular interest to this study are those students with 6-8.9, 24-26.9, and 60-62.9 transfer credits awarded.

We chose to compare direct entry students from the time they amassed 24-29.9 credits within the institution with transfer students possessing 24-29.9 transfer credits. A similar analysis was conducted comparing direct entry students from the time they amassed 60 credits with transfer students with 60-65.9 transfer credits.

**Figure 2: Distribution of transfer credits awarded to student entering Mount Royal University**



## Definition of transfer student

At Mount Royal University, a formal definition of "transfer student" for studies like this doesn't currently exist. Within Enrolment Services, participants felt that the current provincial definitions around mobility and transferability (see [key terms](#)) could be improved by having a separate subset of transferability based on the number of transfer credits a student is awarded, similar to how institutions use basis of admission. The lack of a consistent internal MRU definition comes in part due to MRU's change in status to a University in 2009. The change in status has resulted in new and changed programs, and an evolving student body, which is only now beginning to normalize under MRU's new mandate.

For the purposes of this analysis it was agreed that the definition of a "transfer student" would include the following categories:

- Awarded 6 or more transfer credits
- Awarded 15 or more transfer credits
- Awarded 24 or more transfer credits
- Presence of a previously completed degree.

These thresholds were chosen as they aligned well with internal reporting practices at the institution and provide a way to isolate the impact of higher versus lower amounts of transfer credit. Further, they are in alignment with the number of transfer credits awarded to large groups of students (see Figure 2). Students who did not meet any of the above definitions were classified as "direct entry" (from high school). One of the limitations of this method is that some students who get classified as direct entry may in reality be another category. For example, at MRU, mature students have a separate admission category from high school or post-secondary applicants. These mature applicants would get labelled as either direct entry or transfer based on the definitions above, for the purposes of this study.

The table below shows the resulting number of students within each category. These thresholds were chosen as they provide context of whether the student has a small number of transferrable courses or a larger number. The higher requirement on transfer credits means fewer students will be counted as a transfer student; while basing the definition on the completion of a previous degree means only 1.5% of students would be classified as transfer. By way of example, using a threshold of 6 transfer credits to determine transfer status shows that 4,284 students meet the requirement of having 6 or more transfer credits, and in turn are labelled as transfer students. Increasing the threshold to 24 means that only students with 24 or more transfer credits get counted as transfer, which reduces the number of transfer students to 2,396 (with the difference moving to direct entry as they had between 6 and 23 transfer credits).

**Table 1: Total students records by admit type threshold**

(students at or beyond the admit type threshold are coded as transfer students. Others are coded as direct entry.)

Admit type	Admit type threshold			
	6 transfer credits	15 transfer credits	24 transfer credits	Previous degree completed
Direct entry	15,954	17,068	17,842	19,939
Transfer	4,284	3,170	2,396	299
<b>Grand Total</b>	<b>20,238</b>	<b>20,238</b>	<b>20,238</b>	<b>20,238</b>

In order to conduct an analysis that accurately compared transfer students and direct entry students, we had to exclude students who were admitted prior to the start of the study period. This amounted to 11,634 students. Within this excluded group, there was a large group (4,782) who enrolled in courses within one year of being admitted, but in the absence of knowing what these students did in the intervening time, we were unable to include them in the [case study](#). Because this study was limited only to degree-seeking students, it is likely that many of these students began their studies at MRU in a different credential (certificate, diploma, applied degree, or university transfer). A transfer into a degree-seeking program after the admit term would then cause the student to appear in the dataset for this case study, whether by the election of the student, or because a program changed from a different credential to a degree as a result of MRU's own change in status to a university. Thus, the following number of students remained for further analysis.

**Table 2: Students records analyzed by admit type threshold**

(students at or beyond the admit type threshold are coded as transfer students. Others are coded as direct entry.)

Admit type (group)	Admit type threshold			
	6 transfer credits	15 transfer credits	24 transfer credits	Previous degree completed
Direct entry	7,152	7,431	7,680	8,462
Transfer	1,452	1,173	924	142
<b>Grand Total</b>	<b>8,604</b>	<b>8,604</b>	<b>8,604</b>	<b>8,604</b>

## Demographics

MRU provided information on both Indigenous status and the gender of students.

Figure 3 shows the breakdown of students by Indigenous status. This field is based on the Indigenous flag provided by MRU at the time the students were admitted to the institution. Indigenous students accounted for about 3.7% of direct entry students, and 4.1-4.3% of transfer students using the thresholds of 6, 15, and 24 credits. Using the threshold of having completed a previous degree, the proportion of transfer students declaring as indigenous is about 3.8%. As Indigenous status is self-declared, some students may not have declared their status to MRU.

**Figure 3: Indigenous status by admit type**

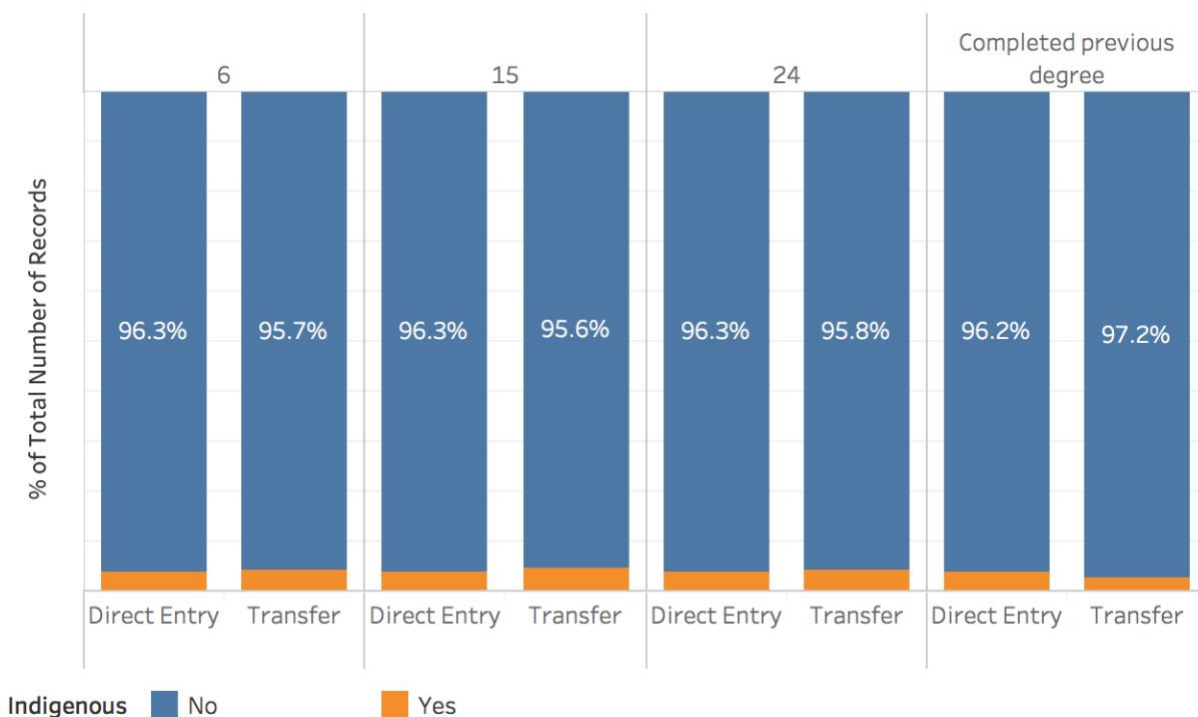
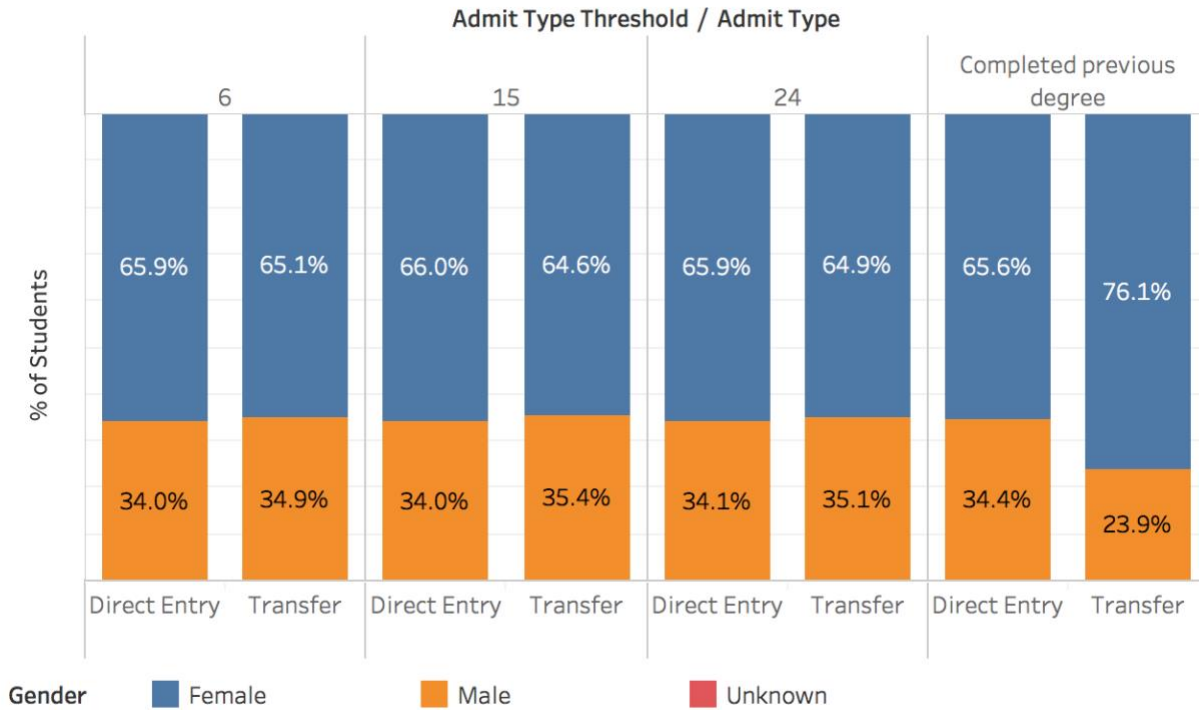


Figure 4 shows the breakdown of students by gender. Females represented about 66% of direct entry students, and 65% of external transfer students using the thresholds of 6, 15, and 24 credits. Using the threshold of completing a previous degree, direct entry remains about 66% female, but increases to 76% female for transfer students.

Figure 4: Gender breakdown of Mount Royal University students



## Key metrics

This section focuses on key metrics that compare the success of transfer students and direct entry students. For MRU, each metric is divided into the four categories of how transfer is defined for this study. Additionally, several metrics are framed in the context of normalizing the data. For example, on the time to completion metrics, there is an "unadjusted" version which just compares transfer and direct entry. Predictably, transfer students finish their degrees quicker (owing to their transfer credits received). There are also normalized metrics for time to completion. At MRU, this includes a normalization at 24 credits and 60 credits. For the 24 credit version, direct entry students are measured from the time they hit 24 credits at MRU, and are compared to transfer students with between 24 and 30 transfer credits. As a rough proxy, this means comparing a direct entry student at the start of their second year with a direct entry student who has transferred in enough credits to begin second year.

This report contains 5 major metrics:

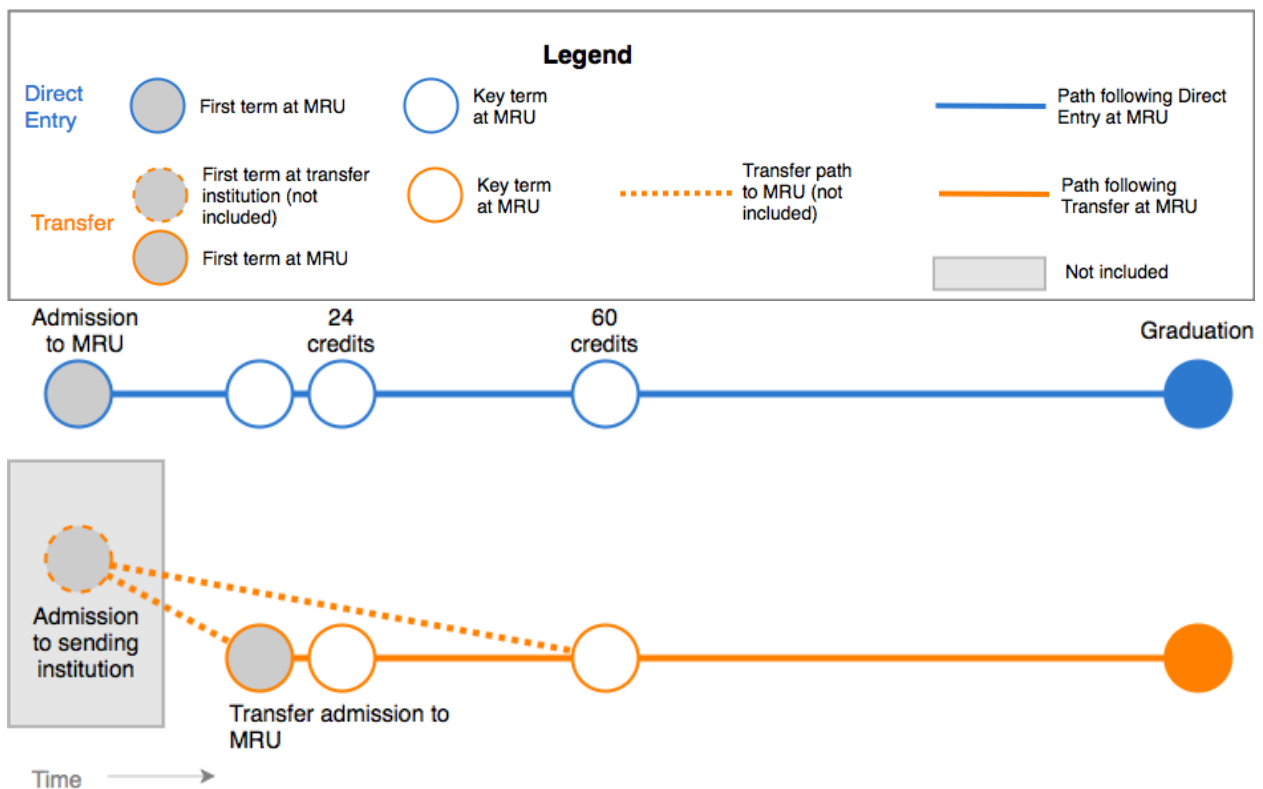
- Study metric 1: time to completion
- Study metric 2: graduation rate
- Study metric 3: progression
- Study metric 4: grade point average at graduation
- Study metric 5: average credits over time



Within these metrics, time to completion, graduation rate, and progression (study metrics 1, 2, and 3) contain unadjusted, normalized to 24 credit, and normalized to 60 credit models. Time to completion (study metric 1) has both a descriptive statistics version and a regression version, and grade point average at graduation (study metric 4) contain regression analyses, while the other metrics (study metrics 2, 3, and 5) are descriptive statistics. Regression analysis allows the study to better control for the effect of different variables such as faculty, gender, or indigenous status, while descriptive statistics show a high level summary for the group.

Figure 5 illustrates key points in the student's academic career: the time of admission to MRU, 24 credits (approximate end of first year), 60 credits (end of second year), and graduation. Note that the time of admission to the sending institution for external transfer students is shown here for illustrative purposes, but is otherwise not known to this study.

Figure 5 - Key time points for study metrics, overview



Time to completion (study metric 1) calculates how long, in years, it takes students from a key start point at MRU to graduation. Graduation rate (study metric 2) calculates what proportion of the admit cohort achieved graduation within 4 or 6 years.

Grade point average at graduation (study metric 4) is calculated at the time of graduation also shown in these figures. For each of these metrics, graduation is a fixed point in time.

Figure 6 augments Figure 5 by adding an overlay that shows the 3 models (unadjusted, normalized to 24 credits, and normalized to 60 credits) employed for these study metrics.

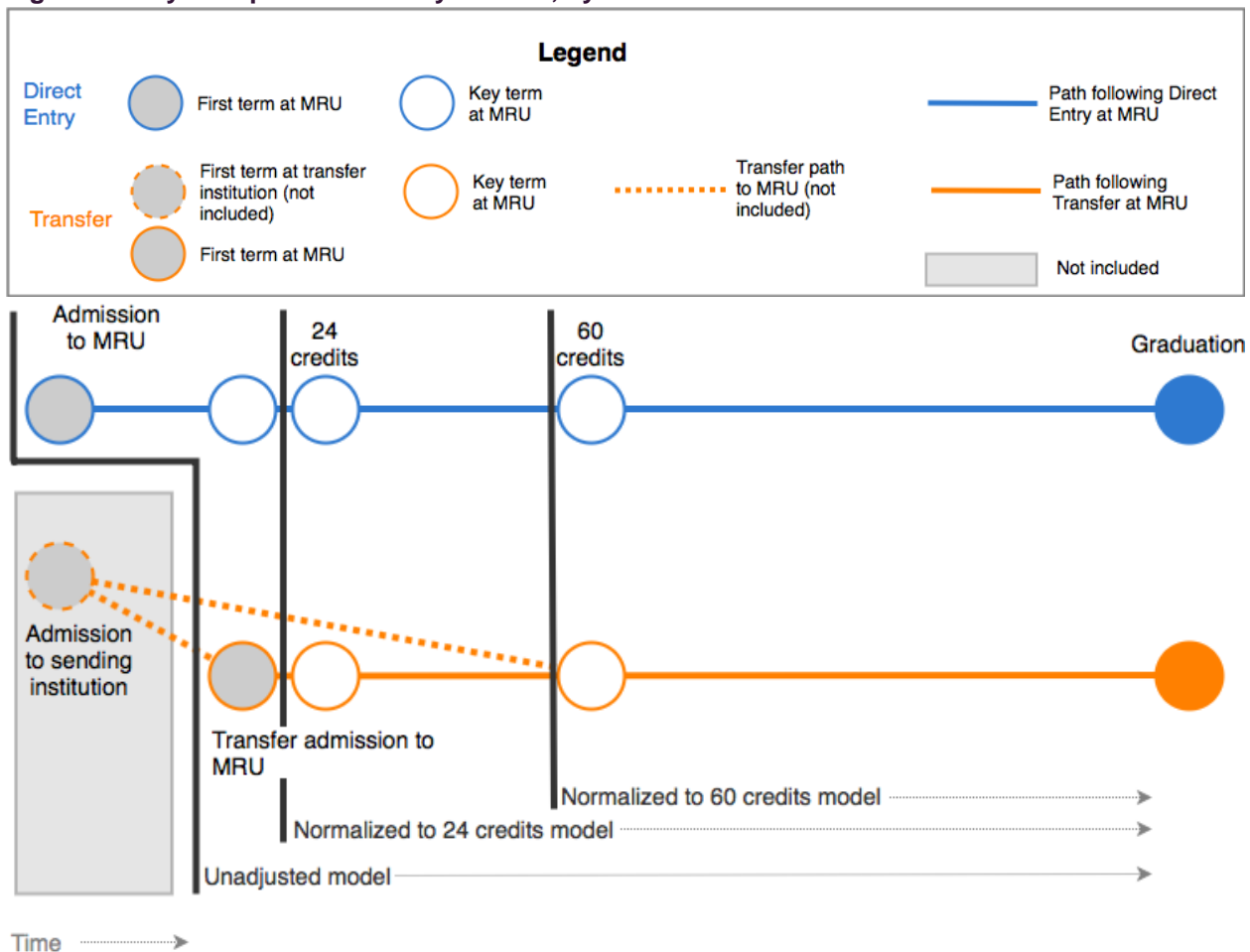
The unadjusted model compares from the start of the MRU admission year to the end date of the graduation year, as shown in Figure 6, with the start point illustrated by the leftmost grey dashed line. All groups here are measured from their most recent admission year to graduation. Note, however, that transfer groups will have amassed at least the number of transfer credits defined by the admit type threshold (6, 15, 24 credit hours, or completion of previous degree).

The normalized to 24 credits model is a method to compare these admit groups using a common baseline of 24-30 credits achieved, either within MRU or externally. Figure 6 illustrates this concept, with the start point shown by the middle grey dashed line. In this model, students are compared from the same starting point (24-30 credits) through graduation.

Similarly, the normalized to 60 credits model is a method to compare these admit groups using a common baseline of 60-66 credits achieved, either within MRU or externally. Figure 6 illustrates this concept, with the start point shown by the rightmost grey dashed line. In this model, students are compared from the same starting point (60-66 credits) through graduation.

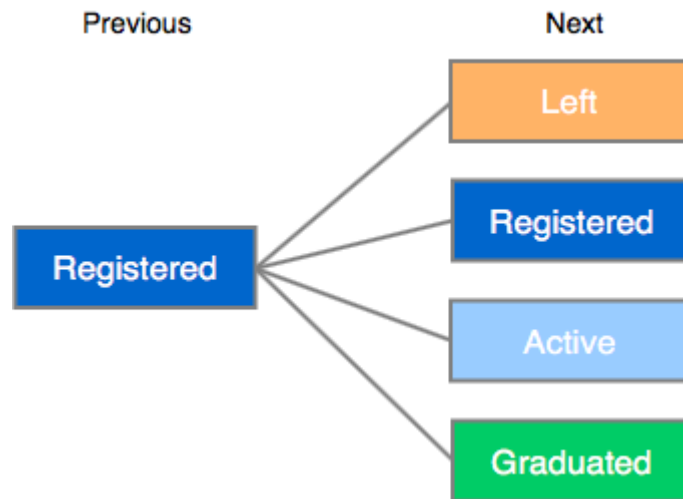
[Study metric 4](#), average GPA at graduation is calculated at the point of graduation for each of the direct entry and transfer groups.

**Figure 6 - Key time points for study metrics, by model**



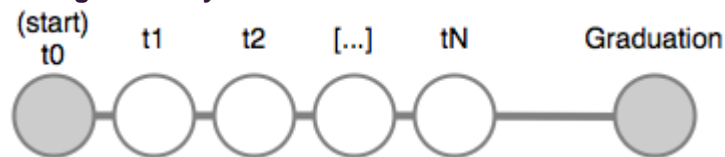
[Study metric 3](#) (progression) has two forms. The first form is a progression status in each year, as shown in Figure 7. This metric begins with a particular admission cohort who were registered in the previous year, and shows the proportion of that cohort in one of four statuses: left, registered, active but not registered (and returned later), and graduated.

**Figure 7 - Annual progression**



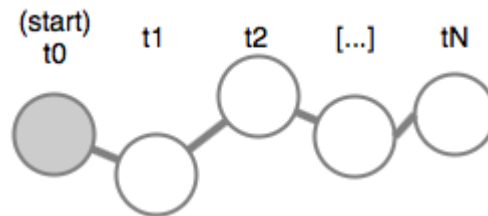
The second progression metric is progression to a particular registration year (see Figure 8). This metric considers the proportion of an admit cohort who continued to register after a specific number of terms. The start point (start /  $t_0$ ) is dynamic in much the same way as the previous metrics: there is an unadjusted model, where the start point is the admission term; a normalized to 24 credits model, where the start point is the completion of 24-30 credits; and, a normalized to 60 credits model, where the start point is the completion of 60-66 credits. In the figure below,  $t_0$  represents the start point of the model, while  $t_1$  means the student has completed 1 term,  $t_2$  means completed 2 terms, and  $t_N$  means completed N terms.

**Figure 8 - Progression to registration year**



[Study metric 5](#), average number of credits over time, shows the average number of credits pursued in particular years for each admit type group (see Figure 9). In this representation of the metric,  $t_0$  represents the starting point, with  $t_1$  representing the number of credits in term 1,  $t_2$  representing the number of credits in term 2, and  $t_N$  representing the number of credits in term N.

Figure 9 - Average number of credits



Each metric is now explored in more detail.

## Study metric 1: Time to completion

The following section focuses on time to credential completion: defined as the number of elapsed years between when the student began studying and graduation.

### Time to completion descriptive statistics

This measure of time to completion was limited to students who:

1. graduated
2. were admitted at least 5 years prior to the end of the study period
3. were admitted after the start of the study period

Figure 10 shows that transfer students graduate nearly one year faster than direct entry students. This difference is softened somewhat when the definition of transfer is based on the completion of a previous degree. Note that in the case of having completed a previous degree, the sample size is very small: as shown in Table 2, 142 students met the criteria of being admitted within the study period and having completed a previous degree to be classified as “transfer” for this report’s [case study](#). The small numbers effect is compounded further by requiring students to graduate to be included in metrics that follow. For example, 29, 55, and 57 students respectively met the criteria for time to completion as shown in Figures 10-12.

Given many students with a completed credential receive credit towards subsequent degrees, it is possible that the transfer credits are not represented in the same way for these students.

Figure 11, where direct entry students are normalized as of the point that they first complete 24 credits, shows the opposite effect - direct entry students finish half a year sooner than their transfer counterparts.

Figure 12, where direct entry students are normalized as of the point that they first complete 60 credits, shows transfer students finishing half a year later than their direct entry counterparts.

Table 3 summarizes the results of the 3 models.

Figure 10: Time to completion descriptive statistics (unadjusted)

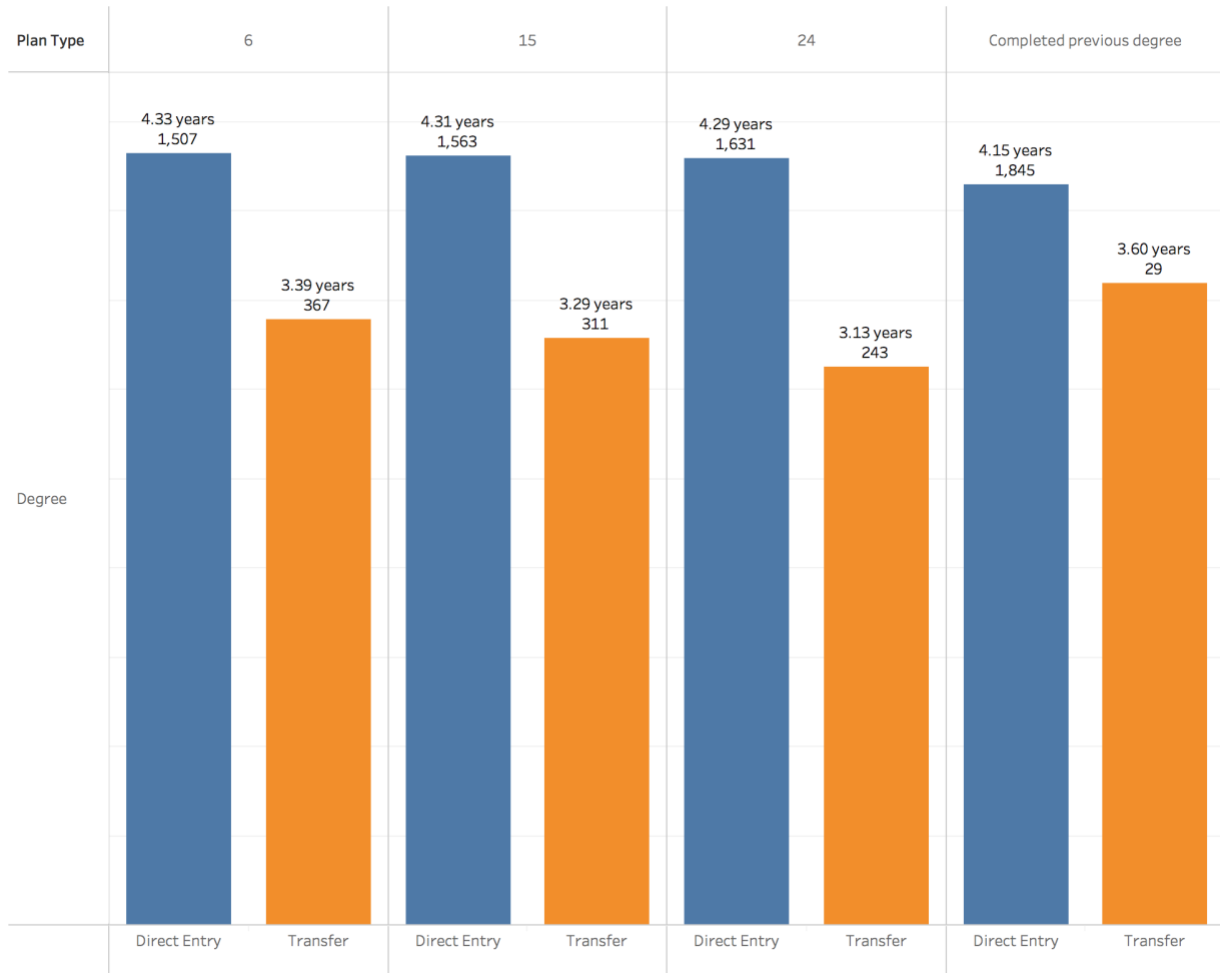


Figure 11: Time to completion descriptive statistics (normalized to 24 credits)

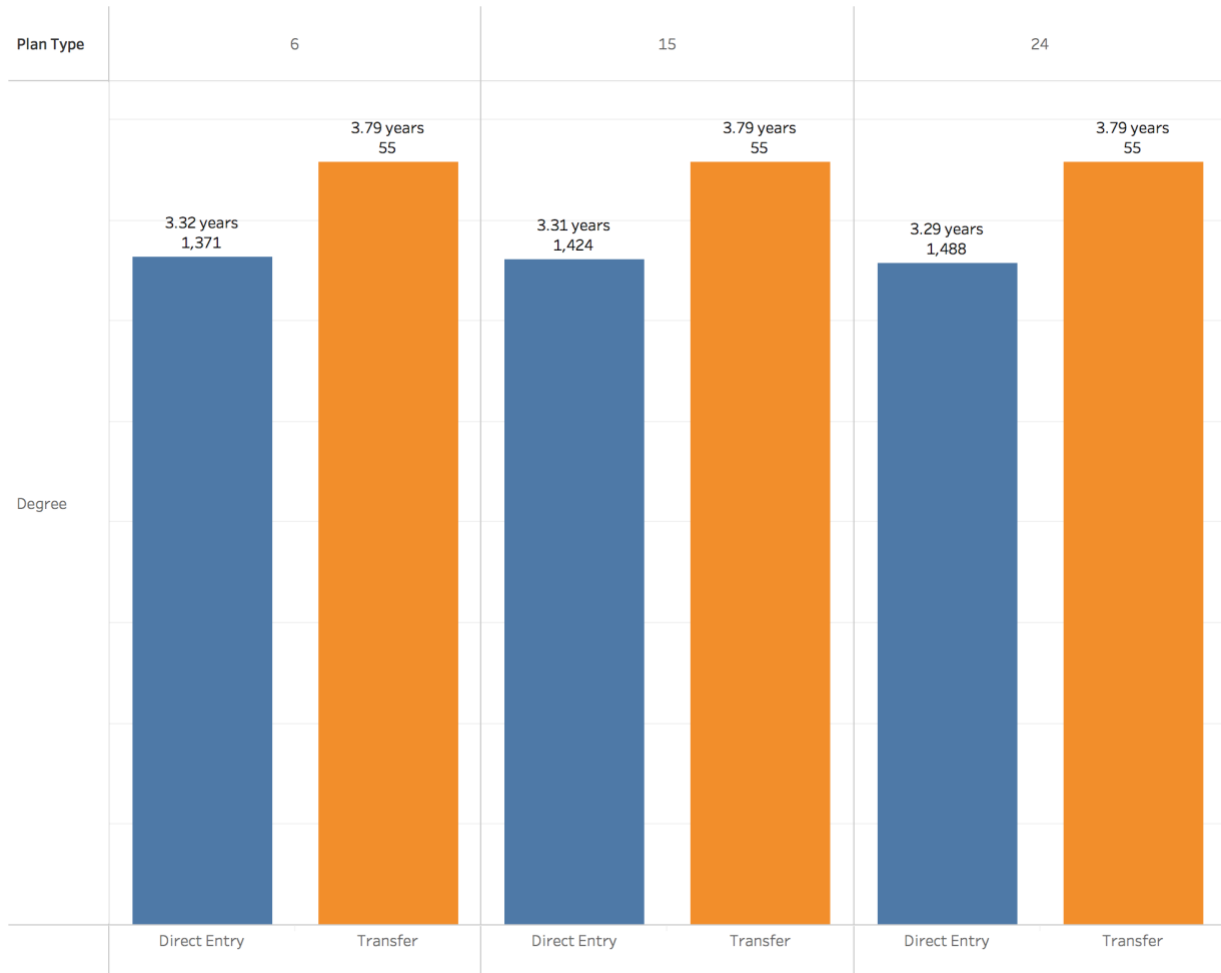
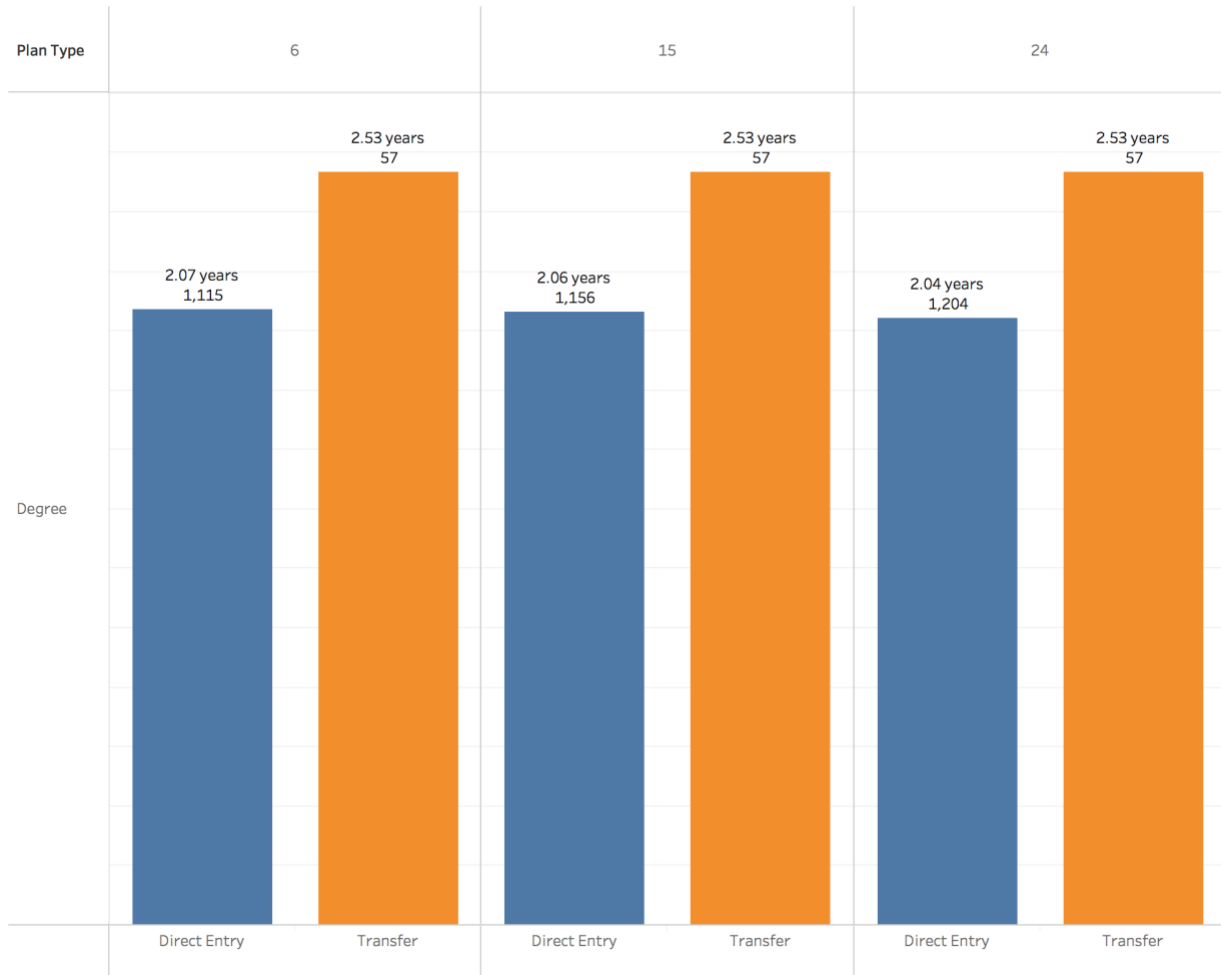


Figure 12: Time to completion descriptive statistics (normalized to 60 credits)



**Table 3: Time to completion descriptive statistics (all models)**

Model	Admit Type Threshold	Plan Type	Avg. Time to Completion		Number of Students	
			Direct Entry	Transfer	Direct Entry	Transfer
<b>Unadjusted</b>	6	Degree	4.33	3.39	1,507	367
	15	Degree	4.31	3.29	1,563	311
	24	Degree	4.29	3.13	1,631	243
	Completed previous degree	Degree	4.15	3.6	1,845	29
<b>Normalized to 24 credits</b>	6	Degree	3.32	3.79	1,371	55
	15	Degree	3.31	3.79	1,424	55
	24	Degree	3.29	3.79	1,488	55
<b>Normalized to 60 credits</b>	6	Degree	2.07	2.53	1,115	57
	15	Degree	2.06	2.53	1,156	57
	24	Degree	2.04	2.53	1,204	57



## Time to completion regression

To see how transfer status and transfer credits would affect a student's time to completion, we performed an ordinary least squares (OLS) linear regression on the information provided by MRU. The variables we included in the model were:

- International (from the `national_status` field, 0=D or domestic, 1=I or international)
- Female (from the `gender` field, 0=M or male, 1=F or female)
- Indigenous (from the `indigenous` field, 0=N or non-indigenous and 1=Y or indigenous)
- Student program (from the `program` field, re-coded as dummy variables with 0 indicating the student was not in that particular program and 1 indicating they were; Business Administration was used as the reference category)
- Admit academic year (based on the student's first enrolled term at MRU, re-coded as dummy variables with 0 indicating the student did not begin at MRU in that year and 1 indicating that they did; 2010/11 was used as the reference category)

We included in the model all students who began at MRU between Fall 2010 and Fall 2012 inclusive and who had graduated by Summer 2017, the last term finalized before the data was produced. Fall 2010 represents the beginning of the study period, while Fall 2012 ensures that all students admitted in a given cohort have had at least 5 years to graduate. We excluded students of unknown gender (N=1) or who graduated from the programs in Child Studies (N=2) and Health & Physical Education (N=1); in all cases the numbers were sufficiently small that their inclusion in the model could have skewed results. Additionally, there were no graduates from the Interior Design program by Summer 2017.

Our model dataset included 1,873 students. Programs varied from 423 graduates (Business Administration) to 11 (Midwifery), and admission academic years varied from 644 graduates (2010/11) to 611 (2011/12). In both cases we selected the largest group as the reference category. The average time to graduation across all 1,873 students was 4.14 years.

In order to interpret the results from the OLS model, there are several different results we need to look at. The first is the model's  $R^2$ , which provides information on how much of the variation in time to completion can be attributed to the inputs; a value of 0 means that our regression is no better than using a base case of assuming everyone will graduate at the average time to completion, while a value of 1 means that our regression perfectly predicts the time to completion. The  $R^2$  can be read as the percentage of the differences in time to completion that is predicted by the model, such as a model with  $R^2$  of .279 is said to predict 27.9% of the variation. The second element to look at is the coefficient for each input to the regression, which indicates how that input affects the result of the regression. In this case, using time to completion, if an input had a coefficient of 0.5 then the generated model suggests that for each increase of 1 in that coefficient the time to completion would be 0.5 years longer. (Some coefficients, like the transfer flag, are either 0 or 1, while others, like the number of transfer credits, could be many different values.) The final element is the input's p-value, which provides a measure of the statistical significance of the input. Similar to  $R^2$ , p is measured between 0 and 1; in p's case, however, we want lower values and below  $p = 0.05$  an input can be called statistically significant. In our model analysis here, we will concentrate on the  $R^2$  for the overall model as well as the coefficient and p values just for the transfer flags.

Generating the OLS model with the variables listed above (international, female, indigenous, program, and admit academic year) provides an  $R^2$  of 0.120, meaning that 12.0% of the variance in time to graduation can be explained by those factors alone. Female students tend to graduate slightly faster than otherwise similar male students (-0.162,  $p < 0.001$ ), while there was no statistically significant difference between domestic and international students or indigenous and non-indigenous students.

We then generated 5 additional OLS models utilizing the original variables plus a single transfer indicator each. One indicator was the number of transfer credits the student had at time of admission to MRU, with the remaining 4 being a transfer flag (0=not a transfer student, 1=transfer student) at the different thresholds: 6, 15, 24 transfer credits awarded and previous degrees. The following table shows the results:

**Table 4: Time to completion regression**

Indicator	Number of transfer students	Model $R^2$	Indicator coefficient	Indicator p-value
Number of transfer credits	394	0.3351	-0.019	***
Transfer flag, threshold 6	367	0.303	-0.934	***
Transfer flag, threshold 15	311	0.322	-1.048	***
Transfer flag, threshold 24	243	0.332	-1.195	***
Transfer flag, threshold previous degree	29	0.123	-.427	
Indicator p-value: * means $p \leq 0.05$ , ** means $p \leq 0.01$ , and *** means $p \leq 0.001$ .				

The results suggest that, with the exception of basing transfer status on whether someone has a previous degree, transfer status explains significant additional variation in the student's time to completion - anywhere from 17.3 percentage points of variation in the 6-credit threshold case to 21.2 percentage points in the 24-credit threshold case. The coefficients are generally sizable as well, with transfer students graduating over a year sooner than otherwise similar students who are not transfers.

Looking at transfer credits, each transfer credit a student brings to MRU suggests they will graduate 0.019 years sooner. This translates to slightly over 18 credits of transfer credit to graduate 4 months or 1 term earlier, and 36 transfer credits to graduate 8 months or 2 terms/1 academic year earlier.

Finally, we added into the “transfer flag, threshold 24” OLS model a variable for the number of transfer credits a student brought to MRU beyond the threshold of 24. In this case, our model had a  $R^2$  of 0.341, indicating it explains 22.1 percentage points more variance than does our original base model, and 1.9 percentage points more than the “transfer flag, threshold 24” model. In this model, the transfer flag had a coefficient of -0.916\*\*\* and the transfer credits variable had a coefficient of -0.009\*\*\*, indicating that a student with 24 transfer credits would graduate nearly 10 months sooner than a non-transfer student and each additional transfer credit would take 0.009 years off to time to graduation.

In keeping with our descriptive statistics analysis above, we also looked at how long it took students to graduate from the point at which they had obtained 24 and 60 credits. For these models we used the 24-

credit threshold group; this only affects the number of students who are classified as direct entry, as we're using a 24 or 60 credit cutoff for inclusion in the dataset. We also created an additional indicator for the number of credits above the 24 or 60 credit threshold the student came into the term with, allowing us to account for the fact some students will have, for example, 27 credits and some 24 and compare appropriately.

The graduation-from-24-credits model had 1,487 direct entry students and 55 transfer students. Students were included if either they were a transfer student who entered MRU with between 24 and 30 credits, or if they were a direct entry student who entered a term at MRU with between 24 and 30 credits. The model has an  $R^2$  of 0.238, and the transfer flag has a coefficient of 0.433\*\*\*, meaning a transfer student will take approximately 5.2 months longer to graduate after having achieved 24 credits than an otherwise similar direct entry student would. The "credits over 24" indicator had a coefficient of -0.073\*\*\*, indicating each additional credit over 24 tends towards graduation approximately 4 weeks faster - in essence, students with at least 29 credits coming into the term in which they first had 24 credits will graduate 1 academic term sooner.

The graduation-from-60-credits model looked at 1,203 direct entry students and 39 transfer students. Students were included if either they were a transfer student who entered MRU with between 60 and 66 credits, or if they were a direct entry student who entered a term at MRU with between 60 and 66 credits. The model has an  $R^2$  of 0.106, and the transfer flag has a coefficient of 0.465\*\*\*, meaning a transfer student will take approximately 5.6 months longer to graduate after having achieved 60 credits than an otherwise similar direct entry student would. The "credits over 60" indicator had a coefficient of -0.018\*\*\*, indicating each additional credit over 60 tends towards graduation approximately 1 week faster.

These results suggest that the differences seen above in Figures 11 and 12 between transfer students and direct entry students in time to graduation from similar starting points of 24 credits or 60 credits persist even when various other factors - such as program, national status, gender, Indigenous status, and year of admission - are controlled for. From the starting point of admission, transfer students graduate more quickly, but once we adjust our starting point to be similar for both groups of students, transfer students take longer to graduate.

## Study metric 2: Graduation rate

The following graduation rate indicates the percentage of students from an entering admit year cohort (regardless of which term within the year they were admitted) who completed their program in 100%, and 150% of expected program completion time. We note that 200% and longer would be optimal, particularly for part-time students, but the data range for this study is too short to allow for that.

For these measures, a proxy of 4 years was assumed to be the length of all degree programs, for the purposes of this study.

The analysis was further limited to only those entering cohorts who had been at the institution for at minimum the length of the program multiplied by the percentage metric. For example, for the graduation rate at 150% of expected program length, only entering cohorts who had been at the institution for 6 years were included (4 years x 150%).

Students studying part-time were included in the analysis. The risk, however, of this inclusion is that part-time students may take longer than 150% of expected program length, so the graduation rate will be

underestimated until such time as a significant longitudinal dataset (8 entering cohorts or more who have had 8 years or more, or 200% of expected program length, to complete) is available. At MRU, students have 8 years to complete their credentials, after which they must seek readmission (P. Warsaba, personal communication, May 11, 2018). In the context of this data, that would mean data stretching back to include the cohorts from between 1999 and 2007, allowing for 8 years to graduate by 2017. This is not realistic at this time due to institutional status changes and systems changes.

### Graduation rate at 100% of expected program length

This table summarizes the size of the entering cohort by admit academic year, after applying filters identified previously.

**Table 5: Size of entering cohorts by admit type threshold**

(students at or beyond the admit type threshold are coded as transfer students. Others are coded as direct entry.)

Program length (years)	Admit type threshold	2010-11		2011-12		2012-13		2013-14	
		Direct entry	Transfer	Direct entry	Transfer	Direct entry	Transfer	Direct entry	Transfer
4	6	916	186	851	186	973	194	867	169
4	15	954	148	886	151	1,015	152	899	137
4	24	996	106	916	121	1,045	122	937	99
4	Prev. Degree	1,089	13	1,014	23	1,152	15	1,021	15

The charts below show the proportion of entering students who completed their program within the expected program length from different measurement points.

Figure 13 illustrates a large divergence, with a significantly higher percentage of transfer students finishing their degrees in the normal length of time (4 years).

Figure 14, where direct entry students are normalized to a baseline of the first semester after they have completed 24 credits at MRU, shows the opposite effect: direct entry students are more likely to finish within 4 years of having completed 24 credits than transfer students with 24-30 transfer credits.

Figure 15, where direct entry students are normalized to 60 credits, shows only marginal difference between the two groups, but with a very small sample size of transfer students.

**Figure 13: Graduation rate at 100% of expected program length (unadjusted)**

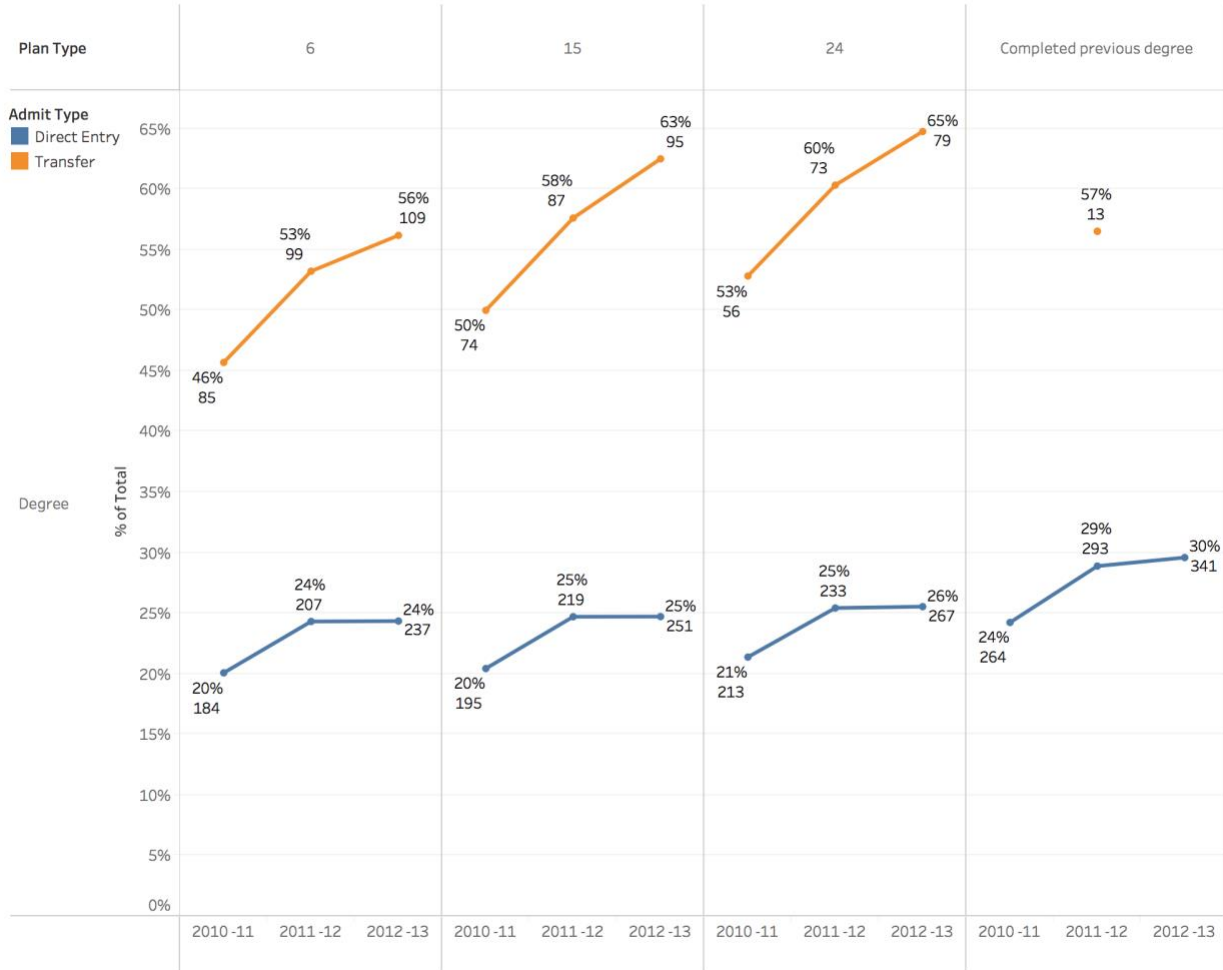


Figure 14: Graduation rate at 100% of expected program length (normalized to 24 credits)

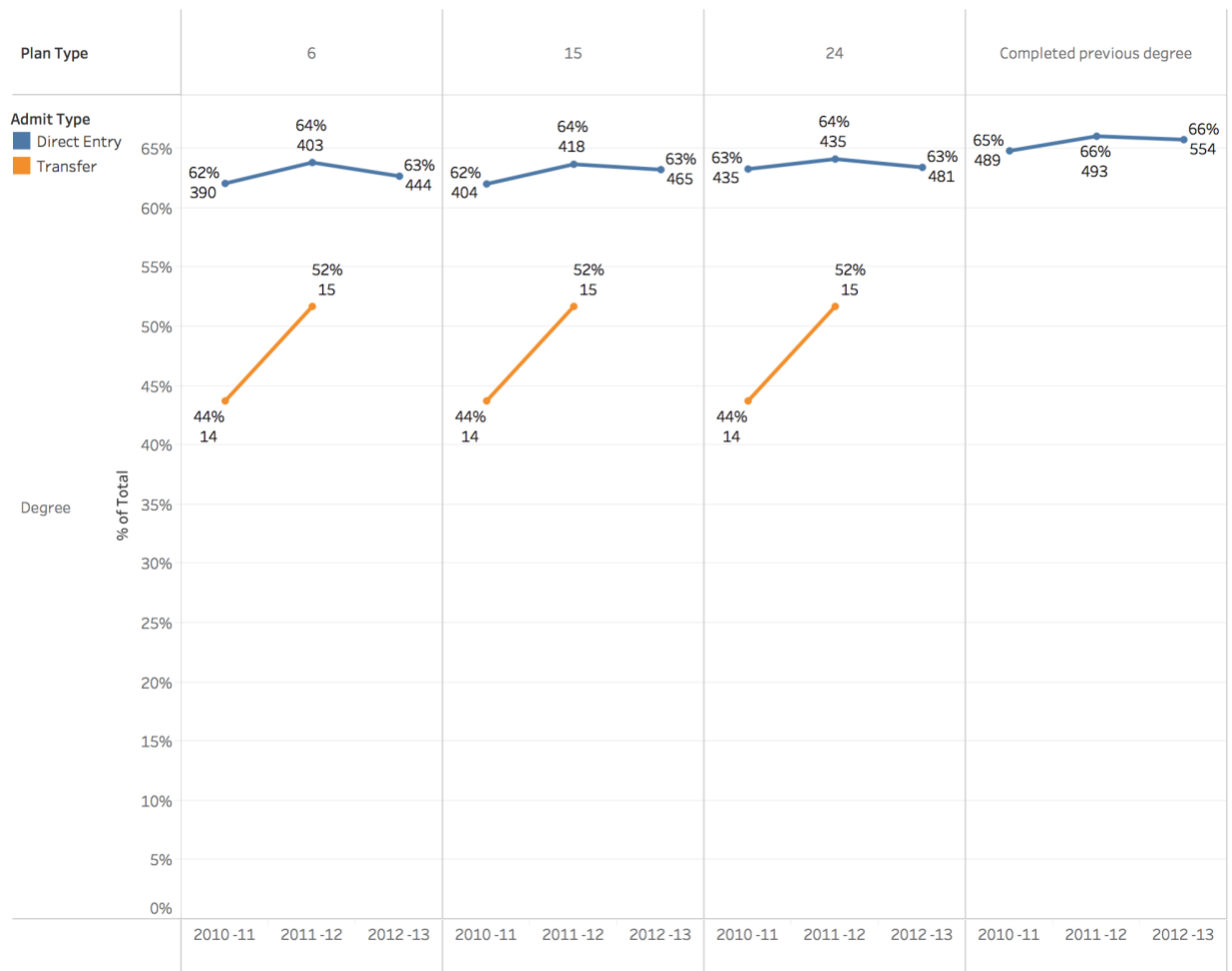
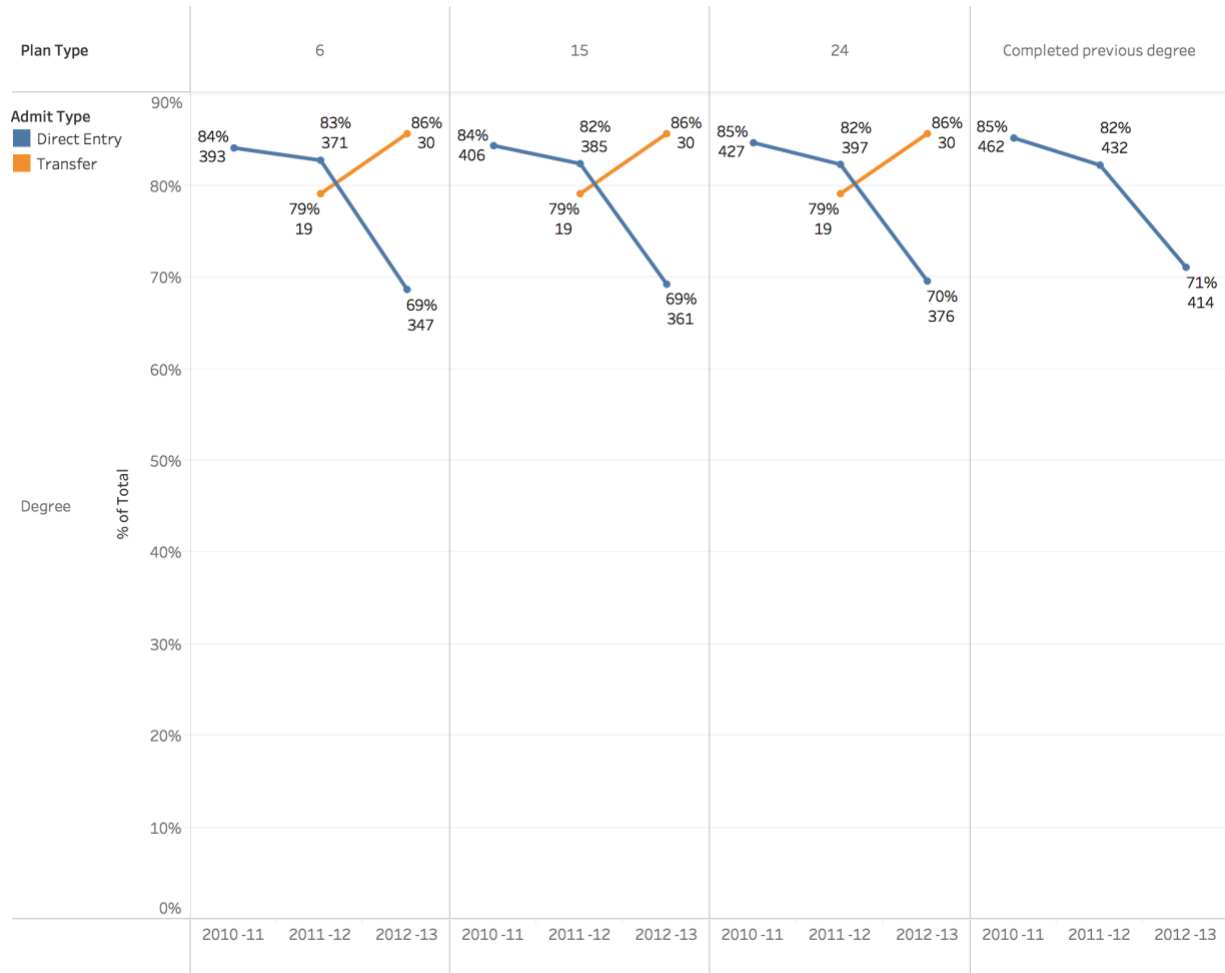


Figure 15: Graduation rate at 100% of expected program length (normalized to 60 credits)



## Graduation rate at 150% of expected program length

This table summarizes the size of the entering cohort by admit academic year, after applying filters identified previously. By 150% of expected program length, we see a convergence of the transfer and direct entry cohorts, particularly for the threshold of 6 transfer credits defining transfer.

**Table 6: Size of entering cohorts by admit type threshold**

(students at or beyond the admit type threshold are coded as transfer students. Others are coded as direct entry.)

Plan type	Program length (years)	Admit type threshold	2010-11	2010-11	2011-12	2011-12
			Direct entry	Transfer	Direct entry	Transfer
Degree	4	6	916	186	851	186
Degree	4	15	954	148	886	151
Degree	4	24	996	106	916	121
Degree	4	Completed previous degree	1,089	13	1,014	23

The charts below show the proportion of entering students who completed their program within 150% of the expected program length. Figure 16, the unadjusted version, shows that transfer students are more likely to finish in 6 years (150% of expected program length) than their direct entry counterparts. However, when we normalized the direct entry students to the term in which they had amassed 24 credits, and compared them with transfer students who had 24-30 credits, there is little difference between the two populations. The 60 credit normalization level is not included here due to the sample of transfer students being too small to analyze.



Figure 16: Graduation rate at 150% of program length (unadjusted)

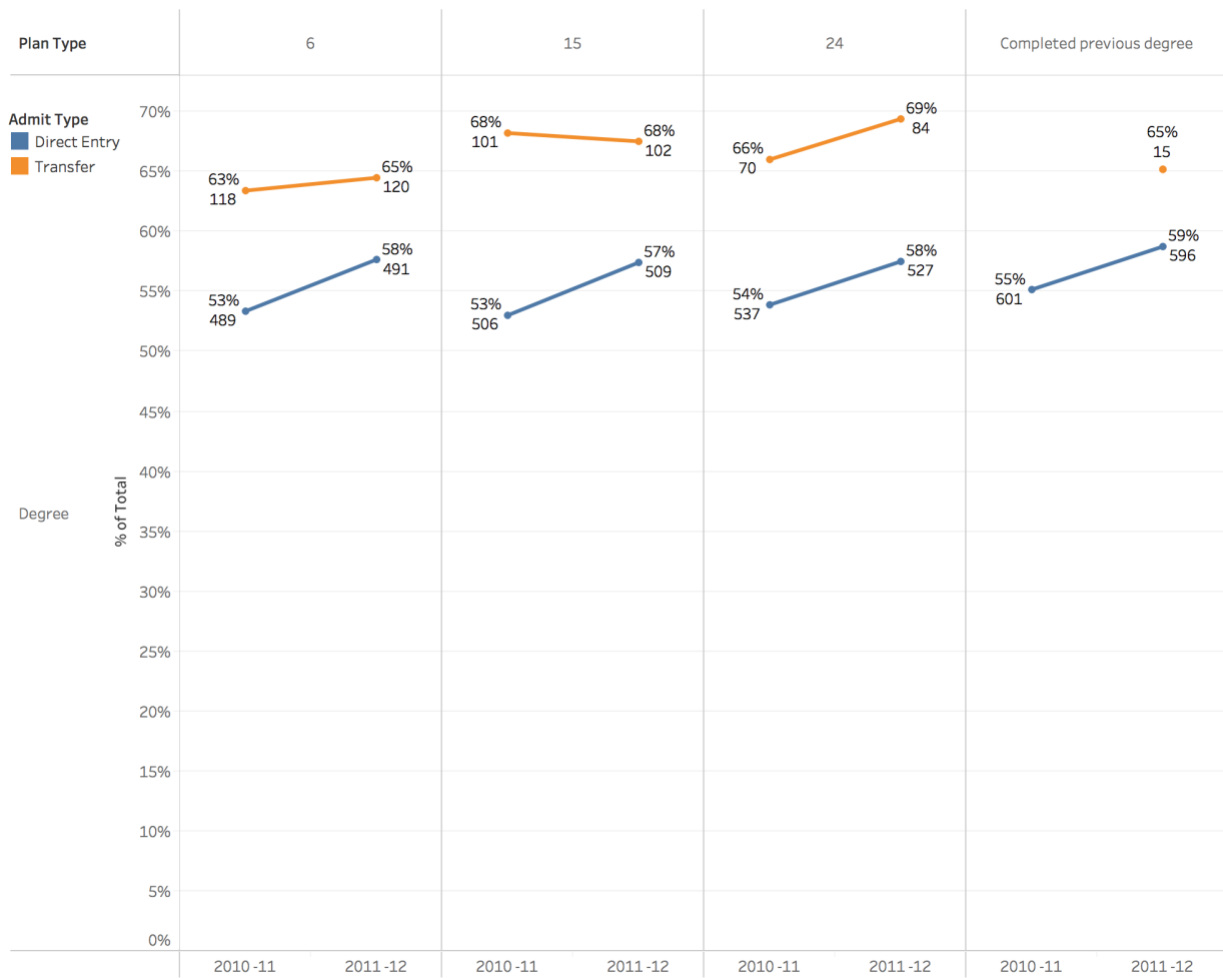
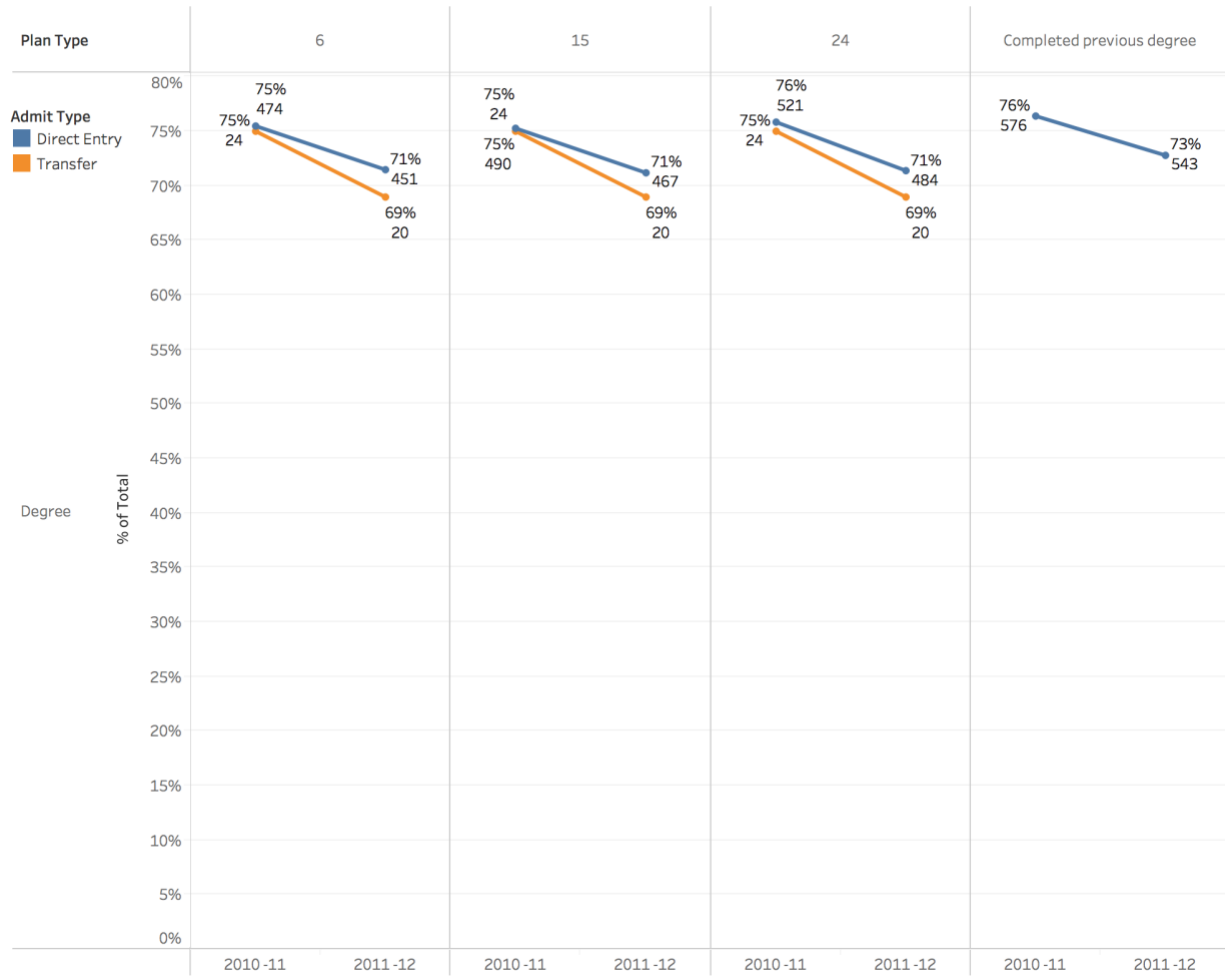


Figure 17: Graduation rate at 150% of program length (normalized to 24 credits)



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## Study metric 3: Progression

This section focuses on student progression and retention, measuring whether a student returned for studies in a particular future term.

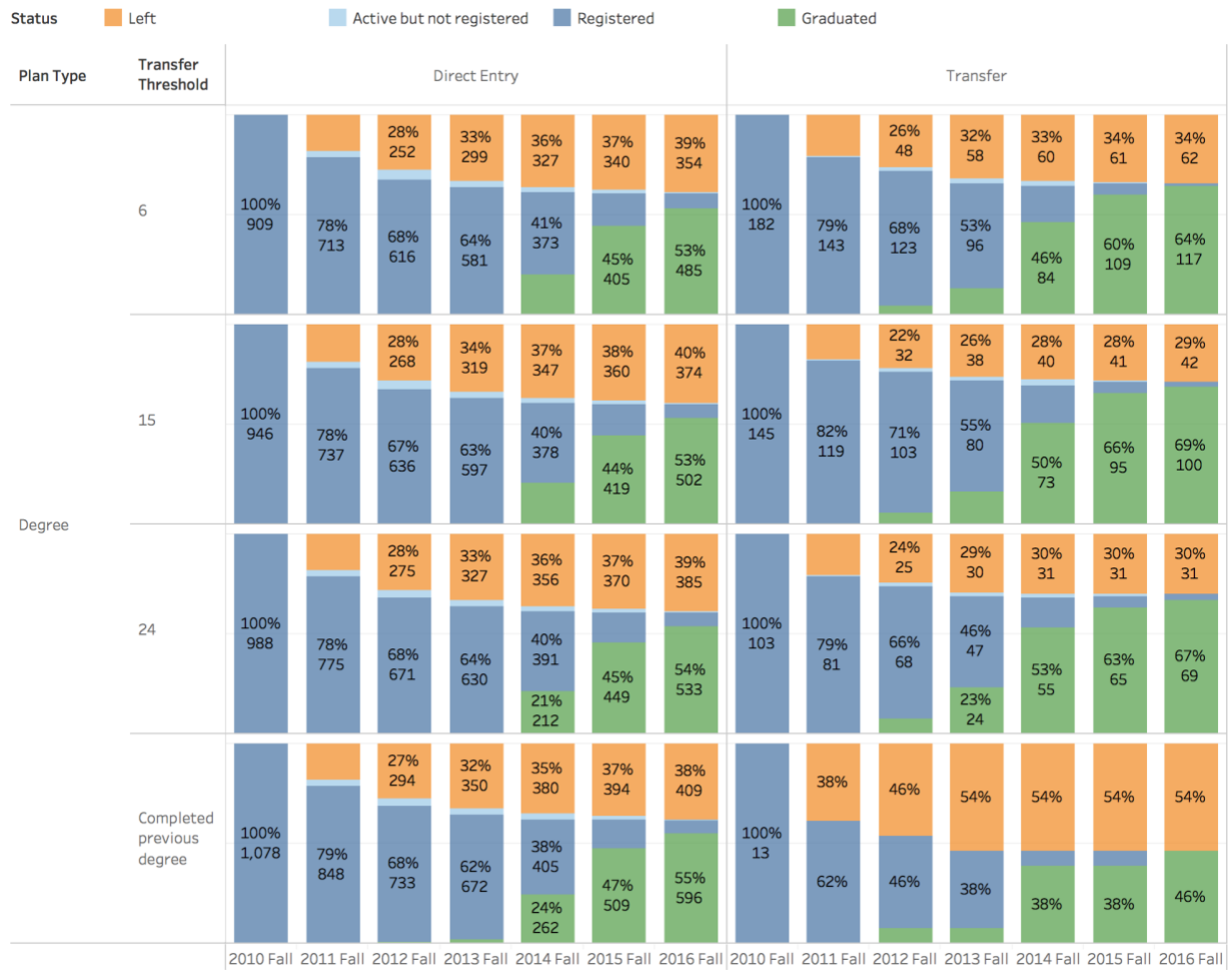
### Progression - Fall to Fall, by admit term

Looking at student progression (Figure 18) - whether the student registered and continued at, graduated from, or left the institution, transfer students were less likely to leave the institution overall, and more likely to still be registered by 2011 fall, the term following admission as compared with direct entry students. Because these figures are not normalized to account for transfer credits, it is expected that transfer students will attain graduation sooner and in greater proportion than their direct entry counterparts.

Similar to the graduation rate at 150% of program length analyses, Progression - Fall to Fall is limited to only students who had attended the institution for at least 150% of the expected program length. In the case of degree programs, this means students were only included if the final term displayed is 6 years or later from their admission term.

Looking at the end of the study cycle, 2016 Fall, for the 6, 15, and 24 transfer threshold groups, about 40% of direct entry students left the institution compared to 30-34% of transfer students. 54% of direct entry students graduated, compared to 64-69% of transfer students. Less than 10% of students were still studying at the institution. Basing the definition of transfer (as an admit type) on completion of a previous degree results should be interpreted with caution due to small N values.

Figure 18: Progression over time - Fall 2010 admit term



### Progression to registration term

This set of metrics is based on the student progressing to the number of terms within the institution. For example, a student commencing studies in Fall 2014 who stays enrolled in Winter 2015 would be retained to Term 2, regardless of the number of credits the student is enrolled in. This type of metric can be useful for term to term retention, and can include part-time students.

The risk of using a metric like this, based solely on registration, is the design of it can have the unintended effect of suggesting that longer is better, when most institutions would prefer that their students graduate within 100%-150% of program length (4-6 years for degree programs).

### Progression to registration term number

The charts below illustrate the number of registration term that a student completes at the institution. In this case, every registration term counts as a term, so students pursuing even a small course load in a summer term will have a higher number than those who do not.

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Figure 19 outlines the unadjusted comparison between direct entry and transfer. In this figure, the largest divergence between the two groups occurs between registration term numbers 6 and 9, where transfer students tend to begin graduating a bit sooner than their direct entry counterparts.

Figure 20 outlines the normalized to 24 credit version, with a narrower gap between the two groups. In this view, direct entry students are more likely to be enrolled in terms 4-7 than their transfer counterparts, but by about term 9 transfer students become more likely to still be registered.

Figure 21 shows that after the 60 credit normalization, transfer students are much more likely to continue registering at the institution beyond 8 terms.

This analysis is limited only to students who have been studying at MRU for 125% of expected program length (5 years).

Figure 19: Progression to registration term number (unadjusted)

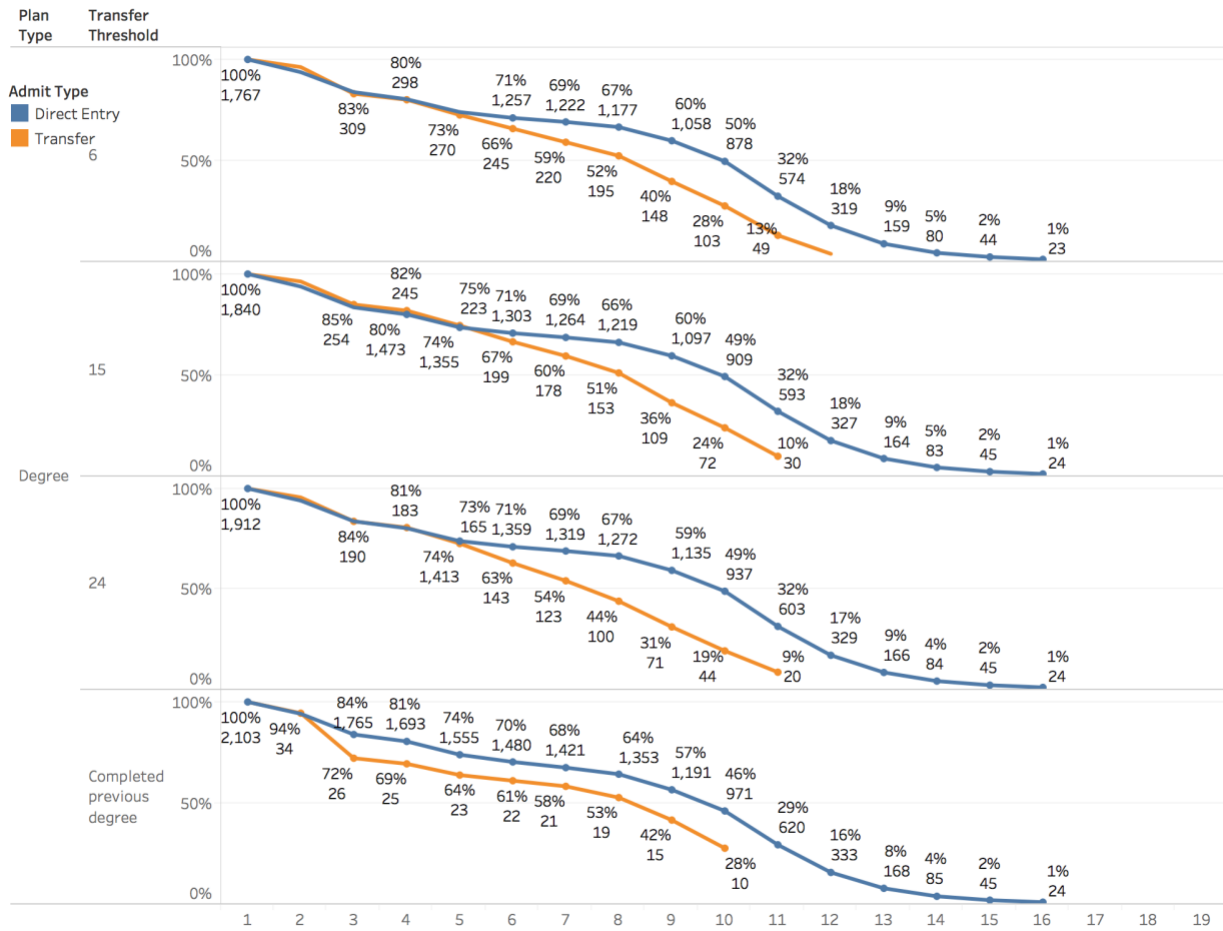


Figure 20: Progression to registration term number (normalized to 24 credits)

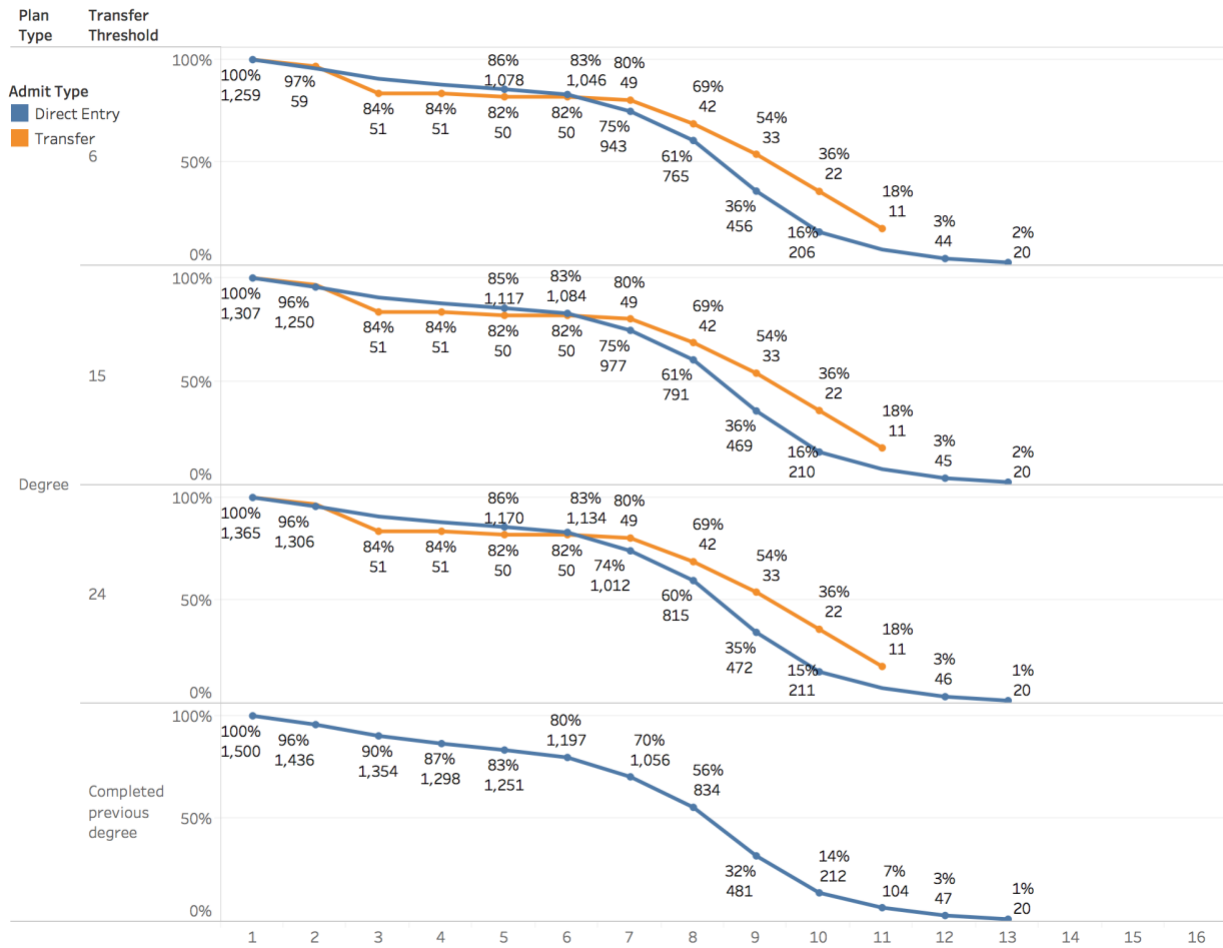
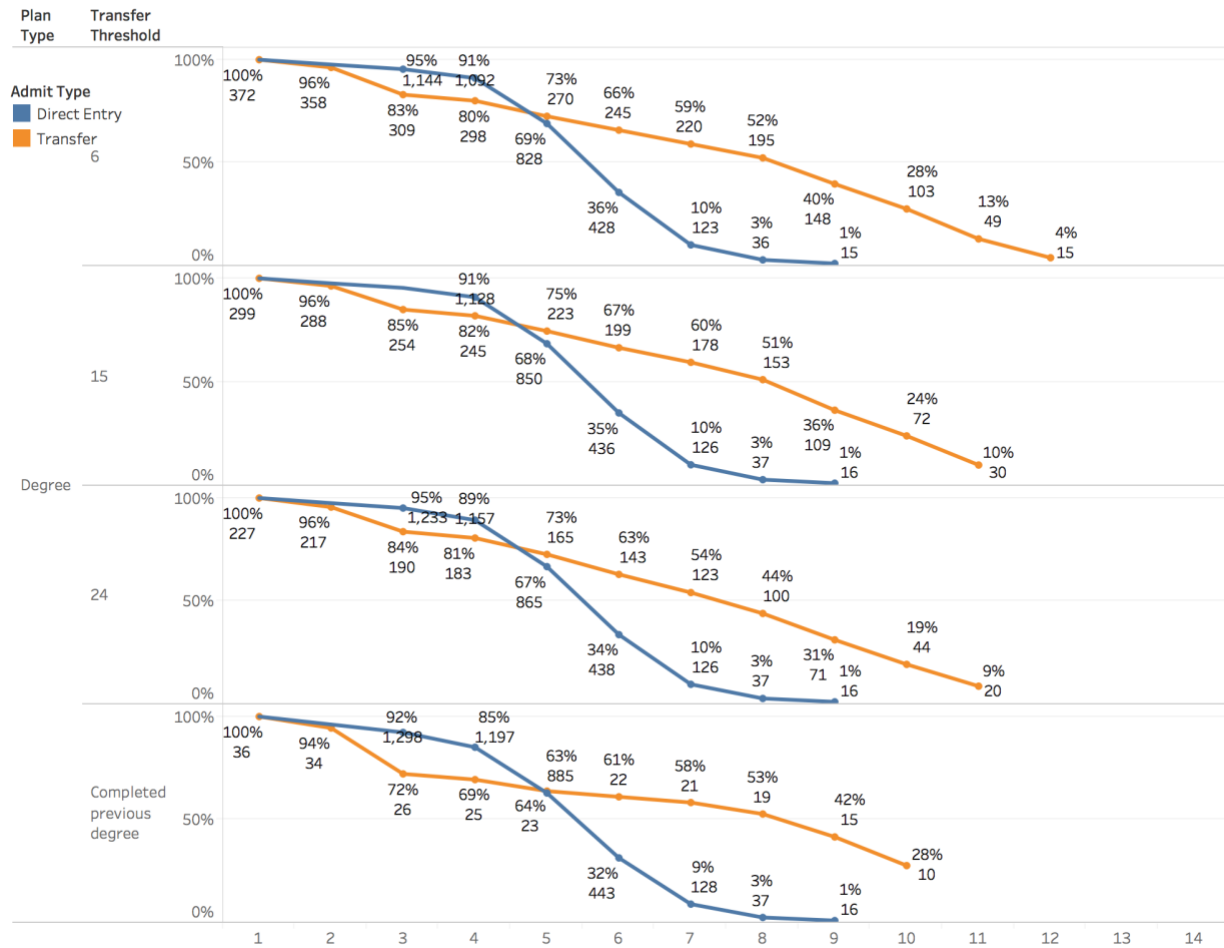


Figure 21: Progression to registration term number (normalized to 60 credits)



### Study metric 4: Grade point average at graduation

Similar to the time to completion metric, we used ordinary least squares (OLS) linear regression to look at how transfer status impacts a student’s grade point average at graduation. One noted limitation of this method is that the cumulative grade point average provided in the base data are as of the end of the previous term, meaning any figures referring to GPA at graduation exclude the impact of the final term of enrolment. The variables we included in the model were:

- International (from the national\_status field, 0=D or domestic, 1=I or international)
- Female (from the gender field, 0=M or male, 1=F or female)
- Indigenous (from the indigenous field, 0=N or non-indigenous and 1=Y or indigenous)
- Student program (from the program field, re-coded as dummy variables with 0 indicating the student was not in that particular program and 1 indicating they were; Business Administration was used as the reference category)



- Admit academic year (based on the student's first enrolled term at MRU, re-coded as dummy variables with 0 indicating the student did not begin at MRU in that year and 1 indicating that they did; 2010/11 was used as the reference category)

We included in the model all students who began at MRU between Fall 2010 and Fall 2012 inclusive and who had graduated by Summer 2017, the last term finalized before the data was produced. Fall 2010 represents the beginning of the study period, while Fall 2012 ensures that all students admitted in a given cohort have had at least 5 years to graduate. We excluded students of unknown gender (N=1) or who graduated from the programs in Child Studies (N=2) and Health & Physical Education (N=1); in all cases the number were sufficiently small that their inclusion in the model could have skewed results. Additionally, there were no graduates from the Interior Design program by Summer 2017.

Our model dataset included 1,873 students. Programs varied from 423 graduates (Business Administration) to 11 (Midwifery), and admission academic years varied from 644 graduates (2010/11) to 611 (2011/12). For both program and admission academic year we selected the largest group as the reference category. The average cumulative GPA at graduation was 3.27.

Generating the OLS model with only taking the variables listed above (international, female, indigenous, program, and admit academic year) provides an  $R^2$  of 0.122, meaning that 12.2% of the variance in graduation GPA can be explained by those factors alone. Students who were international (-0.171,  $p < 0.05$ ) tend to have slightly lower GPAs while females (+0.097,  $p < 0.001$ ) had slightly higher GPAs than otherwise similar students; differences between indigenous and non-indigenous students were statistically insignificant.

We then generated 5 additional OLS models utilizing the original variables plus a single transfer indicator each. One indicator was the number of transfer credits the student had at time of admission to MRU, with the remaining 4 being a transfer flag (0=not a transfer student, 1=transfer student) at the different thresholds: 6, 15, 24 transfer credits awarded and previous degrees. The following table shows the results:

**Table 7: GPA at graduation regression**

Indicator	Number of transfer students	Model $R^2$	Indicator coefficient	Indicator p-value
Number of transfer credits	392	0.140	+0.003	***
Transfer flag, threshold 6	367	0.141	+0.146	***
Transfer flag, threshold 15	311	0.143	+0.162	***
Transfer flag, threshold 24	243	0.1426	+0.178	***
Transfer flag, threshold previous degree	29	0.127	+0.257	**
Indicator p-value: * means $p \leq 0.05$ , ** means $p \leq 0.01$ , and *** means $p \leq 0.001$ .				

Transfer information does provide additional explanation of the variance in graduation GPAs, of about 1.9 to 2.1 percentage points with the outlier being the transfer flag for previous degrees, which only provides an additional 0.5 percentage points. Excluding the previous degree model, transfer status suggests a student will graduate with a higher GPA, on the order of 0.15 to 0.18, than an otherwise-similar non-transfer student. One possible explanation for why transfer information can provide explanatory power is that transfer credits transfer from the sending to receiving institution, but grades do not. For example, if a student completed 30 transferable credits at an external institution, then completed the remaining 90 credits needed for a degree at MRU, that student's MRU GPA would be based only on 90 credits. Comparatively, a direct entry student pursuing all 120 credits at MRU would see their GPA based on all 120 credits.

## Study metric 5: Average credits over time

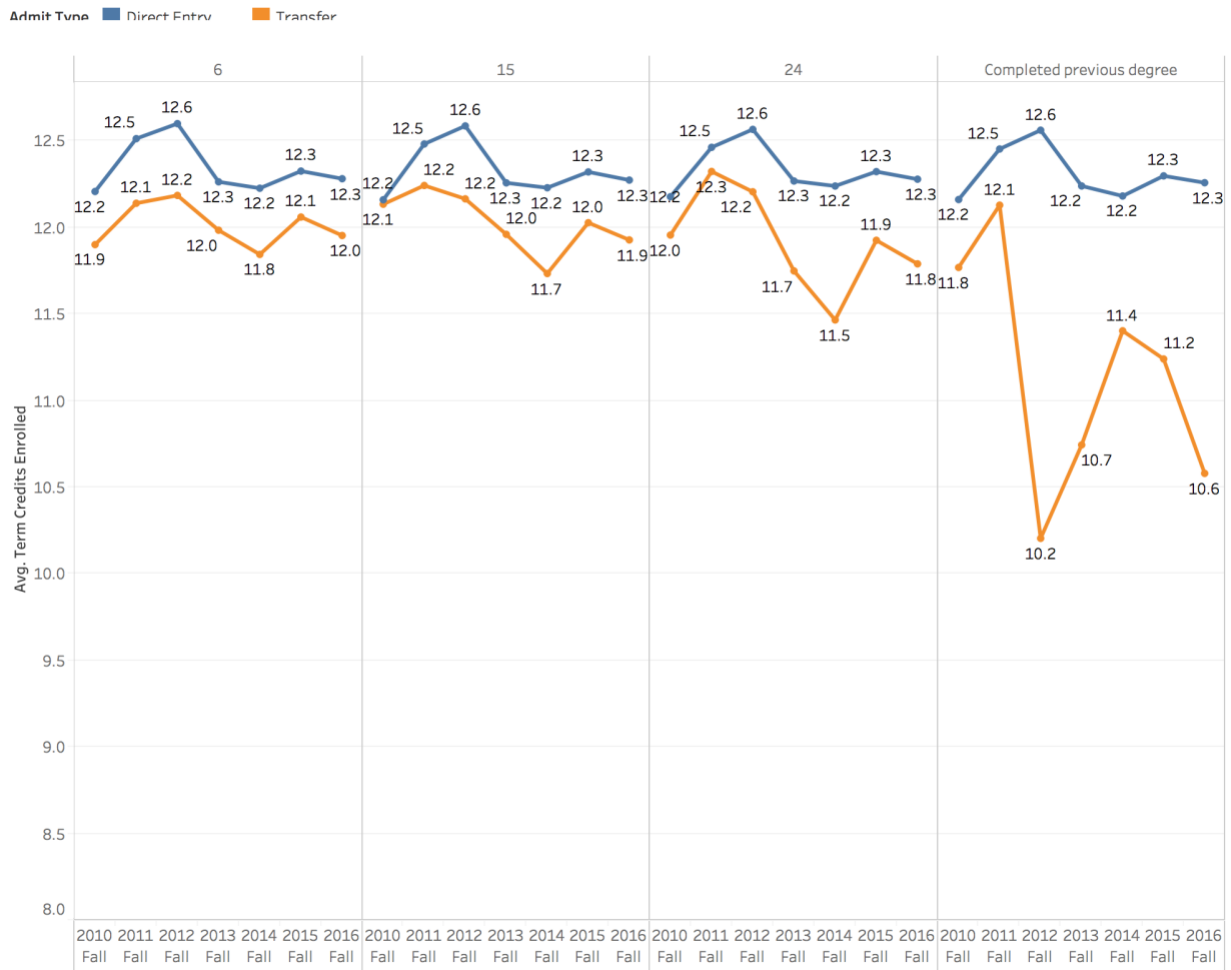
This final metric compares direct entry and transfer students average credits enrolled at the institution over time. It highlights that credit loads are decreasing over time, part of a broader societal trend. On average, transfer students enroll in about 0.5-1 credit less than their direct entry counterparts, with wider gaps at the transfer thresholds of 6 and 24 transfer credits awarded, as well as when the definition is based on the completion of a previous degree.

### Figure 22: Average credits taken over time

Figure 22 shows that transfer students take approximately 0.5-0.7 credits per term fewer than their direct entry counterparts.

# Transfer Student Success in Alberta – Mount Royal University

May 14, 2018



## Future research recommendations

As noted in the [literature review](#), studies focusing on student success from the perspective of a single institution lack insight into all the educational pathways a student may pursue. While a student leaving MRU could be seen as a loss for the institution, if that student found a better academic fit at another institution, this could be a win for both the student and the overall post-secondary system in Alberta.

In this context, we recommend investigating five options to expand understanding of transfer student populations and pathways at MRU and in Alberta.

### **Recommendation #1: Research transfer student time to completion after 24 credits.**

The [case study](#) in this report showed that transfer students take about 6 months longer to finish their credentials than direct entry students, following normalization to 24 credits (see Figure 11). This small difference between the two groups is not unexpected, but the reasons for it were not explored as part of this research project. Further research into better understanding this phenomenon could yield insight into the academic experiences of these students following their transfer to MRU, the utility of their transfer credits, or whether they choose new programs following their arrival at MRU.

### **Recommendation #2: Normalize comparisons between transfer and direct entry.**

This study highlighted the importance of normalizing the data so that reasonable comparisons between direct entry and transfer students could be made on standard metrics like time to completion, graduation rate, and progression. For Mount Royal University, this study used two normalization points: from the time students had achieved 24 credits or 60 credits. For the purposes of comparing two very different groups of transfer and direct entry students, we recommend normalizing to 24 credits for degree programs. Normalizing the data in this way is the fairest way to compare direct entry and transfer students in the absence of knowing information about their study experiences prior to (and potentially after) their time at MRU. Recommendations 3 and 5 suggest datasets that could help close this information gap further.

### **Recommendation #3: Explore the feasibility of using Statistics Canada's Post-Secondary Student Information System data to measure student success.**

This study considered student success metrics from the perspective of data provided by an individual institution. One of the gaps in this information is further insight into student behaviour prior to commencing studies at MRU. For example, this study looked at time to completion within MRU, but a more comprehensive understanding of how long it took a student to complete a credential would include the time spent at institutions prior to MRU.

A study similar to Finnie and Qiu (2009) focused on the entire public post-secondary system in Alberta (or perhaps all of Western Canada) would yield further insight than what this study was able to deliver. Finnie and Qiu used Statistics Canada's PSIS data to study student transitions in Atlantic Canada and found that single institution studies typically underestimate student retention, and consequently student enrolment.

The primary advantage of using the PSIS data for this task is that it contains information about institutions and both the academic programs and individual courses in which students enroll. The PSIS data will provide insight into where a student came from prior to attending the institution and where they went after attending the institution. Data from individual institutions do not provide this broader picture of a student's learner pathway and thus the PSIS data is more effective for assessing some transfer student success metrics. Additionally, Statistics Canada is working on expanding data linkages between PSIS and other datasets, such as provincial primary- and secondary-level educational experience and postsecondary applications for admissions (Frenette, 2018). While these linkages are still in the early stages, they may ultimately allow for deeper research into student success than is currently possible.

Using this data, future research could mine considerably more deeply into the patterns of student behaviour that may influence student success. Further, PSIS already contains data from all public post-secondary institutions in Canada, which would enhance comparability across institutions and over time providing a measure of transfer student outcomes from across Alberta rather than at a single institution.

In the context of the Mount Royal University, PSIS data could provide insight into the student's academic experience prior to, during, and after their time studying at MRU. Information of this type could improve understanding of formal and informal transfer pathways into and out of MRU. As the PSIS is longitudinal in nature, commencing in the academic year 1999-2000, it would provide longer term data that is more directly comparable than what was included in this research study. Longer term data would better facilitate additional metrics, such as considering a 200% graduation rate for degrees, a measure which would better reflect the actual outcomes of part-time students.

While the Youth in Transition Survey, discussed in the [literature review](#) would form a good complement to the PSIS data, the YITS is no longer in production, reducing its utility as time passes.

## **Recommendation #4: Expand the labour market outcomes of graduates of Alberta post-secondary institutions analysis to compare direct entry and transfer students.**

This study has highlighted that there is an interest at MRU in better understanding outcomes of direct entry and external transfer students. One area where the institution would benefit from additional insight and access to data is around graduate earnings. Research by Finnie, Dubois, & Miyairi (2017) looked at the earnings by discipline of direct entry and non-direct entry students at 14 Canadian institutions. As the research did not identify participating institutions, it is not known if MRU was a participant.

MRU appreciated the research on labour market outcomes for post-secondary institutions conducted by the Alberta government and felt that being able to compare labour market outcomes of transfer students and their direct entry counterparts would be a useful complement to the existing study. Having additional

information on labour market outcomes for direct entry and transfer students would help MRU better support these students in their educational journeys. We recommend following up on that report to include the possibility of analyzing labour market outcomes for direct entry and transfer students, as well as other kinds of student mobility.

## **Recommendation #5: Explore the feasibility of creating a provincial dataset that measures transfer student outcomes.**

In the interviews with PSIs related to this study it was noted that the existing mobility reports published by the Advanced Education Ministry could better meet their needs to separately analyze different types of mobility from one another. For example, it is not currently possible to differentiate visiting students from students switching institutions, nor is it possible to differentiate students with a small number of transfer credits versus students with a larger number of transfer credits. This points to the potential for development of a provincial dataset.

Further conversations with institutions to better understand what data is available and what kinds of questions they would like to answer on an Alberta post-secondary-wide basis would assist in the formation of a potential provincial dataset.

British Columbia's Student Transitions Project is one example of such a model. The STP "links student data from the B.C. Ministry of Education with public post-secondary student data. The data allows investigation of student transitions, mobility, and outcomes from the Kindergarten-Grade 12 (K-12) education system to the public post-secondary system, while protecting individual privacy" (Government of British Columbia, April 4, 2018). The STP also allows for a variety of post-secondary focused mobility and pathway related analyses between individual post-secondary institutions, sectors, and regions. This robust dataset has allowed for annual reports including student mobility, pathways, and transitions between regions, sectors, and institutions, as well as special topic reports focused on high school graduates and non-graduates, degree completers, simultaneous enrolment at multiple institutions, and international students. We note that the STP is a distinct dataset from BC's Central Data Warehouse, which the province's research institutions do not participate in. This array of reporting would provide additional value beyond Alberta's current mobility reports.

MRU expressed a strong desire for better access to transfer student outcome data that could be analyzed in conjunction with institutional data. Their needs would be best served by having the ability to connect directly to the transfer student outcome data, rather than working only with summary level information. This additional insight into the academic experiences of students prior to and following their attendance at MRU would help the institution better understand the full picture of success for transfer students.

A project like this one is likely a more substantial undertaking than the first recommendation, and may be a good follow up from that project.

## Conclusion

This research project on transfer student success at Mount Royal University has brought to light a number of important issues related to measuring transfer student success in Alberta. In general, both transfer students and direct entry students are successful at MRU when viewed through the metrics presented in this report.

The study was conducted at a time that the landscape of postsecondary education in Alberta is changing quickly: institutions that formerly were large sending institutions are now completing institutions, changing the nature and dynamics of what it means to be a transfer student.

This project looked at ways of measuring transfer student success at MRU. The proposed metrics for this report's analysis were developed using a mixed methods approach that consisted of

- applying recommendations for best practices for methodology and parameters for analysis identified in the [literature review](#),
- contextualizing the analysis within information gained from the [environmental scan](#) about MRU, which included informal qualitative data in the form of conversations with targeted representatives from MRU, and
- focusing the report's core analysis and conclusions on a regression analysis of quantitative MRU data that were based on targeted data metrics for analysis of transfer student success in comparison to direct entry students."

Prior research suggests that a longer window of time, beyond 150%, for expected program completion would be most appropriate, particularly for students who do not fall into the standard first-time, full-time, four year degree-seeking cohort often used for student outcomes analysis. As the study period used in this report was short, we were unable to produce metrics that would be optimal for a longer term longitudinal study.

## Environmental scan

At MRU, the institutional strategic plan focuses on growing the overall student population, while increasing the percentage of four-year baccalaureate degrees towards 80% of overall program mix.

The environmental scan also highlighted opportunities that MRU sees in regards to improving access to courses, which could in turn impact time to completion and graduation rates by increasing available seats for students. Additional course offerings could change the composition of demand for direct entry, transfer and mobility at the institution.

In addition to being able to define the appropriate starting point for the metrics, this study also highlights the importance of having an appropriate length of time available to study. This study was unable to produce intended graduation rates at 200% and 300% of program length due to the length of the study. In the case of MRU, the change in institutional mandate in 2009 made both the retrieval and utility of earlier data challenging given that many programs changed in the subsequent years. While Alberta's research institutions have data spanning many more years than this study focused on, institutions that have more recently changed mandates or information systems do not have the ability to go back far enough to measure transfer student success in the ways that they would like.

This report notes that a definition of transfer that is more similar to a basis of admission, determined by the number of transfer credits awarded, would be optimal for MRU. The greatest challenge to formalizing such a definition is determining in advance whether transfer credits will in fact count towards graduation in a particular credential, rather than having to determine it following admission.

## Defining transfer students

The [literature review](#), [environmental scan](#), and [case study](#) show that challenges exist when comparing the success of direct entry students with the success of transfer students. One of the challenges lies in appropriately defining the cohort to which a student belongs: when did they start, should part-time students be included.

Another is the definition of transfer itself: one method of defining a transfer student is based on whether a student received transfer credit (aligning with the provincial definition of transferability). Another method is to view transfer as a basis of admission, where transfer students are those surpassing a certain threshold of transfer credits awarded (at MRU, this is 24 external transfer credits for degree programs). This study is based on the latter concept of basis of admission as the definition for transfer.

Additionally, comparing direct entry to transfer students fundamentally compares groups of students with vastly different characteristics and experiences. This study attempted to make the groups more comparable using normalization methods to ensure a common starting point. Further efforts to make the groups comparable could include delving into individual program patterns, full and part-time status, and from even more granular starting points.

Finally, the notion of success itself is open to interpretation. This study took a fairly narrow definition of success as signified by characteristics that institutions are able to measure. However, success for a particular student could be quite different, and would depend on the ability of an institution to measure the student's true intentions. This report is limited to the data available for the study period, and will underestimate retention and graduation on an Alberta-wide basis as the data between the institutions is not currently connected.

## Demographics

Indigenous students accounted for about 3.7% of direct entry students, and 4.1-4.3% of transfer students using the thresholds of 6, 15, and 24 credits. Using the threshold of having completed a previous degree, the proportion of transfer students declaring as indigenous is about 3.8%.

Females represented about 66% of direct entry students, and 65% of external transfer students using the thresholds of 6, 15, and 24 credits. Using the threshold of completing a previous degree, direct entry remains about 66% female, but increases to 76% female for transfer students.



## Normalization and appropriate points in time for comparison

One of the key findings to emerge from this report is based on the point in time at which comparisons are made. As this study was based on information provided by MRU as a receiving institution, it lacked full insight into the experience of students prior to their studies at MRU. To account for this gap, we employed 3 variants to the [key metrics](#) of time to complete, graduation rate, and progression to registration term: an unadjusted model, which considered the admit term with no adjustment relative to either graduation or a particular term number; from the point of achieving 24 credits at MRU (for direct entry students) or via transfer (for transfer students); and from the point of achieving 60 credits.

**Table 8: Time to completion descriptive statistics (all models)**

Model	Admit Type Threshold	Plan Type	Avg. Time to Completion		Number of Students	
			Direct Entry	Transfer	Direct Entry	Transfer
Unadjusted	6	Degree	4.33	3.39	1,507	367
	15	Degree	4.31	3.29	1,563	311
	24	Degree	4.29	3.13	1,631	243
	Completed previous degree	Degree	4.15	3.6	1,845	29
Normalized to 24 credits	6	Degree	3.32	3.79	1,371	55
	15	Degree	3.31	3.79	1,424	55
	24	Degree	3.29	3.79	1,488	55
Normalized to 60 credits	6	Degree	2.07	2.53	1,115	57
	15	Degree	2.06	2.53	1,156	57
	24	Degree	2.04	2.53	1,204	57

Of these, the normalized to 24 credits model had the most robust results, as shown in Table 8, providing a meaningful comparison of direct entry versus transfer. In this case, direct entry students finish about 3 years after completing 24 credits at MRU, about 6 months faster than their transfer counterparts, regardless of whether the 6, 15, or 24 transfer credit threshold was used to determine transfer status (the

sample size on completing a previous degree was too small for this model). Normalizing to 24 credits also aligns well with prior research by McLaughlin et al. (2016), which recommends including a direct entry comparison with transfer students based on a 30-credit threshold (2016). Additionally, the normalized to 24 credits model is a good comparison point for MRU students, roughly at the end of first year, and can be applied to a wider audience (2nd, 3rd, and 4th year) than the normalized to 60 credits version (3rd and 4th year). Additionally, using 24 credits as the baseline is seen by MRU as a fair comparison point: the end of first year for both types of students.

The unadjusted model wasn't optimal for use in this study: it inadvertently favours transfer students because it doesn't have an allowance for or insight into their experience prior to transferring programs or institutions.

The normalized to 60 credit model worked similarly well for the purpose. It is better suited to comparing specifically those transfer students who enter with 60 transfer credits relative to direct entry students at the point of completing the same number of credits.

## Transfer student success at Mount Royal: Completion time, graduation rate, and progression

The [case study](#) completed in this report highlights that both direct entry and transfer students are successful at MRU. However, the method in which one considers this success impacts the results.

### Time to completion

Using the recommended normalized to 24 credits model, direct entry students finish their MRU degrees in 3.3 years, about 5 months faster than transfer students who are awarded 24 transfer credits.

Regression analysis further indicates that transfer indicators provide statistically significant predictive power of time to completion at all transfer credit thresholds, ranging from 17.3 percentage points of variation at the 6-credit threshold to 21.2 percentage points at the 24-credit threshold. This regression analysis, when normalized to 24 credits completed, showed transfer students taking 5.2 months longer than direct-entry students to graduate after achieving 24 credits, even after other variables (national status, gender, indigenous status, program, and admit academic year) are taken into account.

### Graduation rate

The graduation rate measures the proportion of an admit cohort who has graduated by a certain point in time. When looking at graduation 4 years out from the time a student completed 24 credits (the normalized to 24 credit model), about 64% of direct entry students had finished, compared to about 48% of transfer students. When moving out to a 6 year time horizon, the two groups perform similarly, with between 70% and 75% of direct entry and transfer students completing within 6 years.

### Progression

Progression between 2010 Fall and 2016 Fall showed 40% of direct entry students left the institution compared to 30-34% of transfer students. It is possible that transfer students with a higher number of transfer credits may be brushing up against MRU's residency requirements, so tend to study longer at MRU to complete the requisite number of courses. Alternately, not all courses taken at a transfer institution will count towards the specific required courses in their intended program. 54% of direct entry

students graduated, compared to 64-69% of transfer students. Less than 10% of students were still studying at the institution.

Progression to a particular registration term, when normalized to a 24 credit baseline for direct entry students, shows that direct entry and transfer students are about equally likely to register up until registration term 9, at which point transfer students begin to stay longer at the institution.

### **Grade point average at graduation and credits enrolled per year**

Looking at GPA at graduation, just over 12% of the variance can be explained by the variables international, female, age, program, and admit academic year. International tend to have slightly lower GPAs while females had slightly higher GPAs. Adding a transfer indicator suggested that transfer students will graduate with a slightly higher GPA than a similar non-transfer student. One possible explanation for why transfer information can provide explanatory power is that transfer credits transfer from the sending to receiving institution, but grades do not. For example, if a student completed 30 transferable credits at an external institution, then completed the remaining 90 credits needed for a degree at MRU, that student's MRU GPA would be based only on 90 credits. Comparatively, a direct entry student pursuing all 120 credits at MRU would see their GPA based on all 120 credits.

In general, transfer students enroll in about 0.5 credits per term fewer than their direct entry counterparts.

## **Perspectives on data challenges**

This study has illustrated that the participating institutions collect sufficient information to be able to build measures of transfer student success similar to those used in this report. However, the challenge associated with this is not necessarily collecting the right information, but in how it is used. As evidenced by most of the metrics in the [case study](#), and highlighted further in the [literature review](#), these metrics tend to be oriented towards the traditional first-year, four-year, first-time, degree-seeking student. Adjustments made to the metrics to better level the playing field between transfer and direct entry such as normalizing to 24 and 60 credits, show that the lens through which we consider transfer student success influences how the outcomes are reported.

In addition, to be able to define the appropriate starting point for the metrics, this study also highlights that having an appropriate length of time to study available is crucial. This study was unable to produce intended graduation rate at 200% and 300% of program length due to the length of the study. These longer time frames may better illustrate outcomes for part-time students. While some institutions have data spanning many more years than this study focused on, this study looked only at more recent history.

The [environmental scan](#) revealed that institutions use a different definition for transfer than the provincial definition. Generally, institutions consider transfer from the vantage point of a basis of admission, with MRU using 24 credits for degree students as the threshold that determines whether or not a student's basis of admission will be transfer. Conversely, the provincial definition of transferability is based on whether or not a student received transfer credits. As such, further conversation and collaboration among Advanced Education, institutions in Alberta, and the Alberta Council on Admissions and Transfer could allow for a more nuanced approach to defining transfer on a provincial basis, perhaps by credential type. Additional conversation could expand the definition to include the most appropriate ways to categorize students who have some post-secondary experience, but fewer transfer credits than the threshold used

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within institutions. Identifying the potential for a more refined definition and metrics for transfer and transfer credit student success was a key focus of this ACAT [case study](#) for MRU.

Alberta's post-secondary institutions are interested in finding further ways to support the success of their transfer student populations. While this study had several [limitations](#), it creates an opportunity to further conversations on campus about the success of transfer students.

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## Appendix - Data Structure

The base data provided by the institution was transformed into a number of database tables that could be utilized specifically for student success type analysis:

- term\_tbl: a list of all terms included in this study
- student\_term: this table houses enrolment records for each student in each term they were enrolled.
- student\_program: this table houses records for each student at the time of admission. This table also houses bio-demographic information, where provided, including gender, indigenous status, and national status.
- student\_progression\_term: this table brings together information from term\_table, student\_term, and student\_program. It ensures that reporting on student status from the time of entry until 10 years in the future is conceptually possible (though limited by length of the dataset)

These tables, and the transformations required to build them, are further described in the sections that follow.

### Base\_Data\_MRU

This table contains the base data as provided by Mount Royal University.

Column	Data Type	Description	Source and Notes
institution_id	integer	Institution ID	Institutions.institution_id
institution_code	text	Institution short code	Institutions.institution_code
anon_id	integer	Student Anonymous ID	Originally "ID" in Base Data
term	integer	Term code	Base Data
term_gpa	float	Grade Point Average for the Term	Base Data
cumulative_gpa	float	Cumulative GPA as of the end of that Term	Base Data
term_academic_standing_code	text	Academic Standing Code for each term	Base Data
term_academic_standing_desc	text	Academic Standing Description for each term	Base Data
term_credits_enrolled	float	Credits enrolled for the Term	Base Data

term_credits_passed	float	Credits passed for the Term	Base Data
degccode	text	Degree or Program Code	Base Data
previous_degrees	text	Previous degrees completed (at MRU or elsewhere)	Base Data
cumulative_earned_credits	float	Cumulative earned credits (as of that Term)	Base Data
cumulative_transfer_credits	float	Cumulative transfer credits	Base Data
first_enrolled_term	integer	First enrolled term code	Base Data
last_enrolled_term	integer	Most recent enrolled term code, prior to the end of the study period	Base Data
mru_degrees	text	Degrees completed at MRU during the study period.	Base Data. This field is populated when the student graduates.
international	text	International or Domestic	Base Data
indigenous	text	Indigenous or non-Indigenous	Base Data
gender	text	Gender	Base Data

## Term\_Tbl

The term table takes recoded terms from the dataset provided by Mount Royal University and adds start and end dates to each.

Column	Data Type	Description	Source and Notes
institution_id	integer	Institution ID defined for the study ("3")	Created for the study
term	text	Term code	Recoded to year + term code (01, 02, 03, 04)
institution_code	text	Institution Code ("MRU")	Created for the study

term_start_date	text	Start date of the term	For recoded terms ending in: 01 - January 1 02 - May 1 03 - July 1 04 -September 1
term_end_date	text	End date of the term	For recoded terms ending in: 01 - April 30 02 - June 30 03 - August 30 04 - December 30
term_name	text	Descriptive name of the term	01 - Winter 02 - Spring 03 - Summer 04 - Fall

## Student\_Program

The student\_program table is one of the main intermediate tables. It contains all student records for MRU. Plaid used similar tables for three other institutions (MacEwan University, University of Alberta, and University of Lethbrige) participating in parallel ACAT studies. Many variables within this table are recoded for consistency with other institutions.

Column	Data Type	Description	Source and Notes
institution_id	integer	Institution ID	Institutions.institution_id
institution_code	text	Institution short code	Institutions.institution_code
anon_id	text	Student Anonymous ID	As provided by the institution.
admit_type	text	3 main cutoffs are used to determine transfer: 6 transfer credits, 15 transfer credits, and 24 transfer credits. Additionally, whether the student had a previous degree can be used as a proxy for transfer.	
admit_term	text	Admit term, recoded	Admit term, recoded to match Term_tbl.term

program	text	Program	Institutional
plan	text	Academic Plan	Institutional
plan_type	text	Plan Type	Coded as "Degree" as only degree programs were included.
graduated	text	Graduation flag (Y or N)	Created
graduated_term	text	Graduated term, if available	Recoded
graduated_date	text	Graduated date, if available	Institutional
transfer_credits	text	Transfer credits awarded at time of admission for previous post-secondary work at institutions recognized by Mount Royal University	Institutional
transfer_threshold	text	Based on the definition of admit_type	Created
national_status	text	National Status	Recoded to D (Domestic), I (International), or U (Unknown)
indigenous	text	Indigenous status, if provided.	Recoded to Y or N, if provided.
gender	text	Gender	Recoded to F (female), M (male), O (other), or U (unknown).
age	text	Age, if provided.	Institutional
last_school	text	Last School Attended	Institutional
last_school_city	text	Last School Attended City	Institutional
last_school_state	text	Last School Attended Province or State	Institutional
last_school_type	text	Last School Attended Type, if provided	Institutional
program_length	text	Length of program	Created. For Degrees, 4 years

last_school_country	text	Last School Attended Country	Institutional
admit_term_start_date	text	Start date of admit term	Term_tbl.term_start_date
admit_term_end_date	text	End date of admit term	Term_tbl.term_end_date
grad_term_start_date	text	Start date of grad term	Term_tbl.term_start_date
grad_term_end_date	text	End date of grad term	Term_tbl.term_end_date
admit_time_category	text	Determines whether a student is within the study period	Created. If student started on or after the first term reported by the institution, and the student's first enrolment term is within the study period, then Standard. If the student was admitted prior to the study period, identify as such. If the student student's first enrolment term is before their admission term, identify this.
inst_first_term_in_dataset	text	Determines first term reported by the institution.	Earliest term in the dataset
stud_first_term_in_dataset	text	Student's first term in the dataset	Earliest term for each student in the dataset
stud_first_term_start_date	text	Start date of the first term for the student in the dataset	Term_tbl.term_start_date
stud_first_term_end_date	text	End date of the first term for the student in the dataset	Term_tbl.term_end_date
stud_last_term_in_dataset	text	Student's last term in the dataset	Last term for each student in the dataset
stud_last_term_start_date	text	Start date of the last term for the student in the dataset	Term_tbl.term_start_date

stud_last_term_end_date	text	End date of the last term for the student in the dataset	Term_tbl.term_end_date
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## Student\_Term

The student\_term table houses enrolment records for each student in each term they were enrolled, including information on term performance (GPAs), progress (credits and withdrawals) and flags related to each student (first and last term in dataset, and how many total terms they have registered for) in the data for MRU. Similar tables were used for three other institutions (MacEwan University, University of Alberta, University of Lethbridge) participating in parallel ACAT studies.

Column	Data Type	Description	Source and Notes
institution_id	integer	Institution ID	Institutions.institution_id
institution_code	text	Institution short code	Institutions.institution_code
anon_id	text	Student Anonymous ID	As provided by the institution.
term	text	Term code	Institutional (recoded if needed)
term_gpa	text	Grade Point Average for the Term	Base Data
cumulative_gpa	text	Cumulative GPA as of the end of that Term	Base Data
term_academic_standing_code	text	Academic Standing Code for each term	Base Data
term_academic_standing_desc	text	Academic Standing Description for each term	Base Data
term_credits_enrolled	text	Credits enrolled for the Term	Institutional
term_credits_passed	text	Credits passed for the Term	Institutional
cumulative_earned_credits	text	Cumulative earned credits (as of that term)	Institutional
academic_load	text	Full or part-time status that term	Institutional
term_withdrawals	text	Number or credits of	Institutional

		withdrawals that term	
registered	text	Registered flag, for each term	Institutional
unique_key	text	Combination of institution_id and anon_id	Calculated
term_start_date	text	Start date of term	Term_tbl.term_start_date
term_end_date	text	End date of term	Term_tbl.term_end_date
Student_Registered_Term_Count	text	Number of terms the student has registered in	Calculated
inst_first_term_in_dataset	text	Determines first term reported by the institution.	Earliest term in the dataset
ua_reporting_year	text	University of Alberta reporting year	Term_tbl.ua_reporting_year
stud_first_term_in_dataset	text	Student's first term in the dataset	Earliest term for each student in the dataset
stud_first_term_start_date	text	Start date of the first term for the student in the dataset	Term_tbl.term_start_date
stud_first_term_end_date	text	End date of the first term for the student in the dataset	Term_tbl.term_end_date
stud_last_term_in_dataset	text	Student's last term in the dataset	Last term for each student in the dataset
stud_last_term_start_date	text	Start date of the last term for the student in the dataset	Term_tbl.term_start_date
stud_last_term_end_date	text	End date of the last term for the student in the dataset	Term_tbl.term_end_date

## Student\_Progression\_Term

The student\_progression\_term table takes the information in student\_program for each student's admit term, and builds it out over time. First, it joins to each possible term where the term is greater than or

equal to the admit term, and less than or equal to the admit term + 10 years. Then, a left join is performed against the student\_term table. This ensures that for each admit cohort, all future terms are visible, regardless of whether the student registered in classes or not. This, in turn, allows for the calculation of the "Status" field. Similar tables were used for three other institutions (MacEwan University, University of Alberta, University of Lethbridge) participating in parallel ACAT studies.

Column	Data Type	Description	Source and Notes
institution_id	integer	Institution ID	Student_Program
institution_code	text	Institution short code	Student_Program
anon_id	text	Student Anonymous ID	Student_Program
admit_type	text	3 main cutoffs are used to determine transfer: 6 transfer credits, 15 transfer credits, and 24 transfer credits. Additionally, whether the student had a previous degree can be used as a proxy for transfer.	Student_Program
admit_term	text	Admit term, recoded	Student_Program
program	text	Program. Based on Degree Code.	Student_Program
plan_type	text	Plan Type as provided by Mount Royal University	Student_Program
graduated	text	Graduation flag (Y or N)	Student_Program
graduated_term	text	Graduated term, if available	Student_Program
graduated_date	text	Graduated date, if available	Student_Program
transfer_credits	text	Transfer credits at time of admission	Student_Program
transfer_threshold	text	Based on the definition of admit_type.	Student_Program
national_status	text	National Status	Student_Program
indigenous	text	Indigenous status, if provided.	Student_Program



gender	text	Gender	Student_Program
last_school	text	Last School Attended	Student_Program
last_school_city	text	Last School Attended City	Student_Program
last_school_state	text	Last School Attended Province or State	Student_Program
last_school_type	text	Last School Attended Type, if provided	Student_Program
program_length	text	Length of program	Student_Program
last_school_country	text	Last School Attended Country	Student_Program
admit_term_start_date	text	Start date of admit term	Term_tbl
admit_term_end_date	text	End date of admit term	Term_tbl
grad_term_start_date	text	Start date of grad term	Term_tbl
grad_term_end_date	text	End date of grad term	Term_tbl
term	text	Term code	Student_Term
term_start_date	text	Start date of term	Student_Term
term_end_date	text	End date of term	Student_Term
term_gpa	text	Grade Point Average for the Term	Student_Term
cumulative_gpa	text	Cumulative GPA as of the end of that Term	Student_Term
term_academic_standing_code	text	Academic Standing Code for each term	Student_Term
term_academic_standing_desc	text	Academic Standing Description for each term	Student_Term
term_credits_enrolled	text	Credits enrolled for the Term	Student_Term
term_credits_passed	text	Credits passed for the Term	Student_Term

cumulative_earned_credits	text	Cumulative earned credits (as of that Term)	Student_Term
academic_load	text	Full or part-time status that term	Student_Term
term_withdrawals	text	Number or credits of withdrawals that term	Student_Term
registered	text	Registered flag, for each term	Student_Term
unique_key	text	Combination of institution_id and anon_id	Student_Term
Student_Registered_Term_Count	text	Number of terms the student has registered in	Student_Term
Status		Status, for measuring persistence. Student is either Registered, Graduated, or Left	Calculated
admit_time_category	text	Determines if the student's admit term is prior to the student's first term in the dataset	Student_Program
inst_first_term_in_dataset	text	Student's first enrolled term code in the dataset	Student_Term
term_name	text	Descriptive name of the term	Term_tbl
inst_first_term_in_dataset	text	Determines first term reported by the institution.	Earliest term in the dataset
stud_first_term_in_dataset	text	Student's first term in the dataset	Earliest term for each student in the dataset
stud_first_term_start_date	text	Start date of the first term for the student in the dataset	Term_tbl.term_start_date
stud_first_term_end_date	text	End date of the first term for the student in the dataset	Term_tbl.term_end_date
stud_last_term_in_dataset	text	Student's last term in the dataset	Last term for each student in the dataset

stud_last_term_start_date	text	Start date of the last term for the student in the dataset	Term_tbl.term_start_date
stud_last_term_end_date	text	End date of the last term for the student in the dataset	Term_tbl.term_end_date