



EXPLORING AVAILABLE DATA SOURCES TO MEASURE SUCCESS OF ASSOCIATE DEGREE STUDENTS

Prepared for the British Columbia Council on Admissions and
Transfer

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Overview

This paper was originally conceptualized as a review of success measures used by other jurisdictions awarding associate degrees and their applicability to British Columbia's associate degrees. It was intended to inform the BC system's future measurement of the success of BC's associate degree students.

Preliminary review of the available information revealed that most other jurisdictions outside the USA offered predominately applied fields of study in their associate degree or equivalent credential, and also that a large number of the associate degrees awarded in the USA are in applied fields of study. Thus, the success measures used in other jurisdictions would have limited applicability to BC's associate degrees, most of which are in Arts and Sciences. It also became clear that current data limitations in British Columbia preclude producing the kinds of measures of success of associate degree programs produced in the USA. The scope of the project both narrowed in that the focus on identifying applicable measures from other jurisdictions was largely jettisoned, and broadened in that an overview of the credentials offered in other jurisdictions and their context was included along with an assessment of the utility of data sources currently available in BC to measure the success of the associate degree program.

The report reviews the origins of the associate degree in BC and includes an overview of available data on associate degrees in British Columbia (Section 1). It provides a brief description of associate degree or equivalent credentials offered by other jurisdictions along with the goals those credentials are intended to meet where these are available. (Section 2)

The annotated bibliography (Section 4) includes a number of recent research articles from the USA, which has the longest history of associate degrees and, in part, the most similar to BC's, illustrating different approaches to measuring one or more aspects of the success of associate degree programs in that country. Some references from other jurisdictions which may be of interest to further studies of the associate degree are provided in the footnotes in Section 3.

Summary of Findings

The objectives commonly stated for the associate degree are:

- Provide recognition for two years' equivalent of academic work that may be used as a foundation for advanced academic work aimed at achieving a baccalaureate degree or taken to the workplace. These credentials usually have general education requirements that confirm some breadth of knowledge as well as a concentration in a particular field of study.
- Provide an occupationally focussed credential at the end of two years' postsecondary study that is focussed on a particular occupation or industry. In some cases, these may be designed for transfer to an applied baccalaureate degree or they may be geared towards immediate employment in a particular industry or occupation.

Another occasionally stated objective of the associate degree is to broaden access to postsecondary education for a particular group of potential learners.

Success measures may include transfer to an upper level academic program, academic success in upper level academic programs, completion of a baccalaureate degree, or employment. The latter measure is often refined as earnings greater than those earned by holders of a high school diploma or a one-year college certificate. At least one study attempts to measure the level of civic engagement of associate degree holders when compared to holders of other academic credentials and some measured aspects of accessibility and social mobility and another looks at changes in the race and ethnicity of degree recipients over time.

Many of the studies from the USA, particularly those examining the labour market outcomes, investigate a number of applied associate degrees, thus making the relevance of their findings to BC's predominately arts and sciences associate degrees uncertain at best. The methodology of the studies, however, may be applicable in BC.

Several studies point out that the results of their analyses varied with field of study, race and gender, and socioeconomic factors, suggesting that it was very important to have as much specificity as possible in the data set being analyzed to truly understand the success of associate degree programs.

The structure of the credential, its goals and the measures of its success are in all cases grounded in the context in which the credential was developed and is offered. In other words, an associate degree is not the same program in different jurisdictions.

The datasets available to BC researchers interested in measuring the success of associate degrees do not currently provide the breadth of data needed to do the job as thoroughly as it can be done in the USA. These limitations are described in Section 3 of this report.

Section 1. Associate Degrees in British Columbia 1988 to Present

1.1. Beginnings of the Associate Degree in BC

The genesis of the associate degree in British Columbia is not clear from the accessible records. Memories of those in the system at the time suggest that interest came from vice-presidents academic who were concerned that either there was no appropriate credential for students who completed two years of academic work at a community college, and/or that there was no incentive for students to complete the second year of academic studies at a community college. The earliest document found mentioning the associate degree in the BC community college context was the report of the Provincial Access Committee,¹ colloquially known as the Access for All report, which recommended that “legislation be changed to allow colleges to grant associate degrees.”² The report does not indicate what the Committee saw as the purposes of the associate degree, but does refer in its report to the “demand from the college regions for strengthened and predictable first and second year academic programs transferable for credit to one of the three coastal universities.”³

In 1991 the British Columbia Council on Admissions and Transfer (BCCAT) recommended to government the establishment of Associate of Arts and of Science degrees, each with a set of provincial curricular requirements. The following year an amendment to the College and Institute Act containing the requirement that an institution “grant an associate degree to a student who has met the applicable standards for associate degrees”⁴ was presented to the Legislative Assembly by the Minister of Advanced Education, Training and Technology and was passed.

A June 2000 BCCAT document stated that in 1991 the associate degree was intended to be “... an academically sound and publicly credible credential which would be an achievement goal for students at the then-community colleges and a benchmark of academic success in the eyes of the general public and potential employers.”⁵ Between 1993 and 1998 approximately 1,350 students were awarded associate degrees in British Columbia.⁶

Following a review of the appropriateness of associate degree curriculum by a system-wide Task Force in 1998-2000, new associate degree requirements were recommended to, and later approved by, the Minister of Advanced Education, Training and Technology. With these new requirements, came an expanded statement of purpose for the credential: “to provide an educational experience that prepares students for work, citizenship and an enriched life as an educated person, and to lay a solid foundation for further study.”⁷

¹ Access to Advanced Education and Job Training in British Columbia submitted to the Minister of Advanced Education and Job Training in September 1988

² Ibid, page 23

³ Ibid, page 15

⁴ Bill 23 – 1992: University Amendment Act, 1992, Section 3.

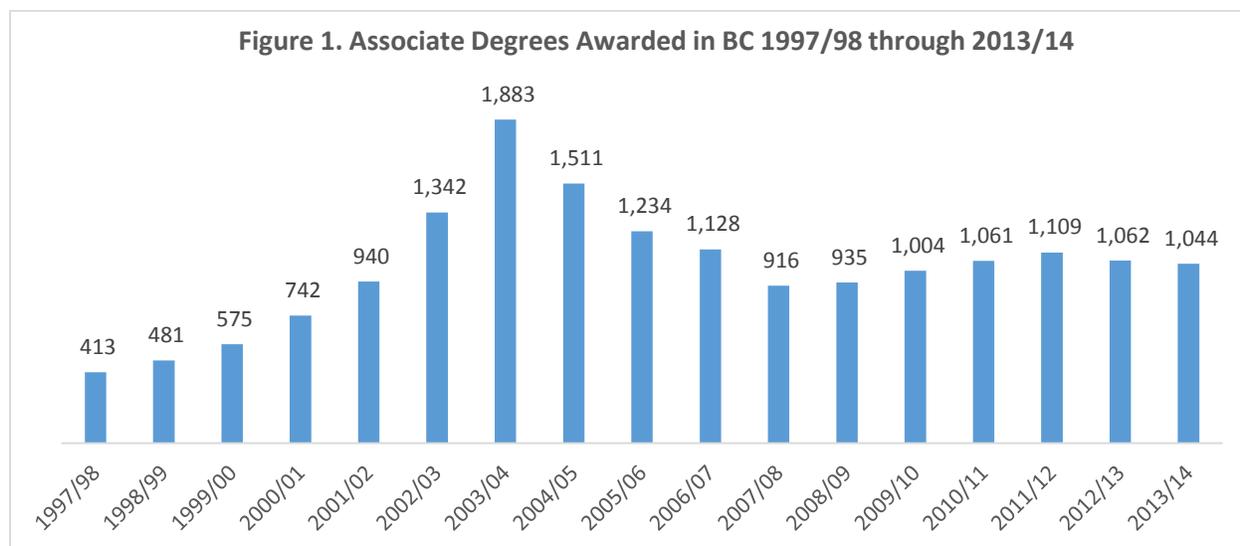
⁵ Reported in New Associate Degree Requirements, The Advisor, BCCAT, June 2000

⁶ Ibid

⁷ Ibid

1.2 Associate Degrees and Transfer to Research-Intensive Universities

In the 1990s through early 2000s, BC universities responded to enrolment pressures by raising admission requirements for both direct entry and transfer students. It appears that in the late 1990s - early 2000s, some universities gave associate degree completers an admission advantage over transfer students without one.⁸ The rapid increase in associate degrees awarded between 2002/03 and 2004/05 (Figure 1; years reported in the STP are academic years) is generally assumed to reflect this situation as more students saw the associate degree as a way to facilitate their transfer.



Note: Data for Figure 1 drawn from the Student Transitions Project (STP) database September 2015. Years reported in the STP are academic years.

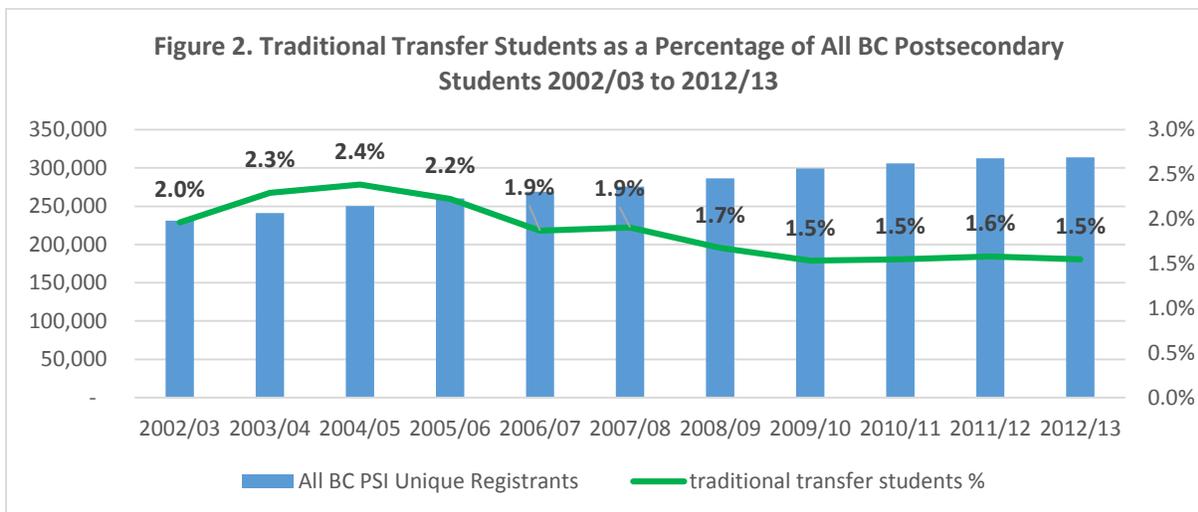
The addition of new student spaces at the research-intensive universities and the expansion of degree-granting institutions in BC in the mid-2000s reduced enrolment pressure on the research-intensive universities, and the associate degree's importance as an advantage for BC postsecondary students wanting to transfer appeared to wane.

By 2006/07 the absolute numbers of traditional transfer students⁹ moving to a research-intensive university from another BC public postsecondary institution began to fall even as the total number of unique students in the system continued to climb. In 2004/05 the percentage of such students transferring was 2.4%; it fell steadily to 1.5% in 2009/10 and has remained at that level. (Figure 2)

⁸ For example, SFU offered "first priority in admission to the Faculties of Arts and Science respectively" subject to certain requirements, through the 1990s and early 2000s. In 2005, the university instituted a new policy of admitting associate degree holders with a variable GPA that provided them an advantage over transfer students who did not hold an associate degree (See SFU Academic Calendar, 2004-05, p. 31).

⁹ A traditional transfer student is defined as a student who transferred to a research-intensive university from a BC college, institute or teaching-intensive university with a minimum of 24 credits and a cumulative GPA of at least 2.00 with of "BC College" or "BC Associate Degree" as the basis of admission. Definition included in [Highlights from the Student Transitions Project](#), February 2015, p.8

It should be noted that the data in Figure 2 represent only a subset of students moving from one BC postsecondary institution (PSI) to a research university as other students who do not fit the definition of a traditional transfer student also move and transfer credits.



Note: Data for Figure 2 from Highlights from the Student Transitions Project, February 2015, p. 8, and drawn from the STP database, December 2015.

In its discussion of transfer with an associate degree, the BC Transfer Guide¹⁰ states that “Universities will guarantee 60 transfer credits to holders of an associate degree, even if all the courses taken towards the degree do not transfer individually to that institution.” UVic and UBC mention associate degrees as a separate category in admissions and provide a 60 transfer credit guarantee. However, no admission advantage is given to associate degree graduates at these universities. The students admitted with an associate degree are required to fulfil all prerequisites in their degree program, which may imply taking more than 120 credits to complete a degree.¹¹ Only UNBC “guarantees admission to baccalaureate programs and full transfer credit”¹² for students with an associate degree. UNBC was also able to distinguish students admitted on the basis of an associate degree from other transfer students in published reporting for the period from 2008/09 to 2012/13.¹³ Although SFU offers “preference in the admission process” for associate degree graduates from public BC colleges, the university has been combining these students with other college transfer students in recent public reports on transfer students’ performance.¹⁴

¹⁰ BC Transfer Guide. www.bctransferguide.ca/associate/transfer. 15 December 2015

¹¹ UBC 2015/16 Academic Calendar. <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=2,25,422,0>.

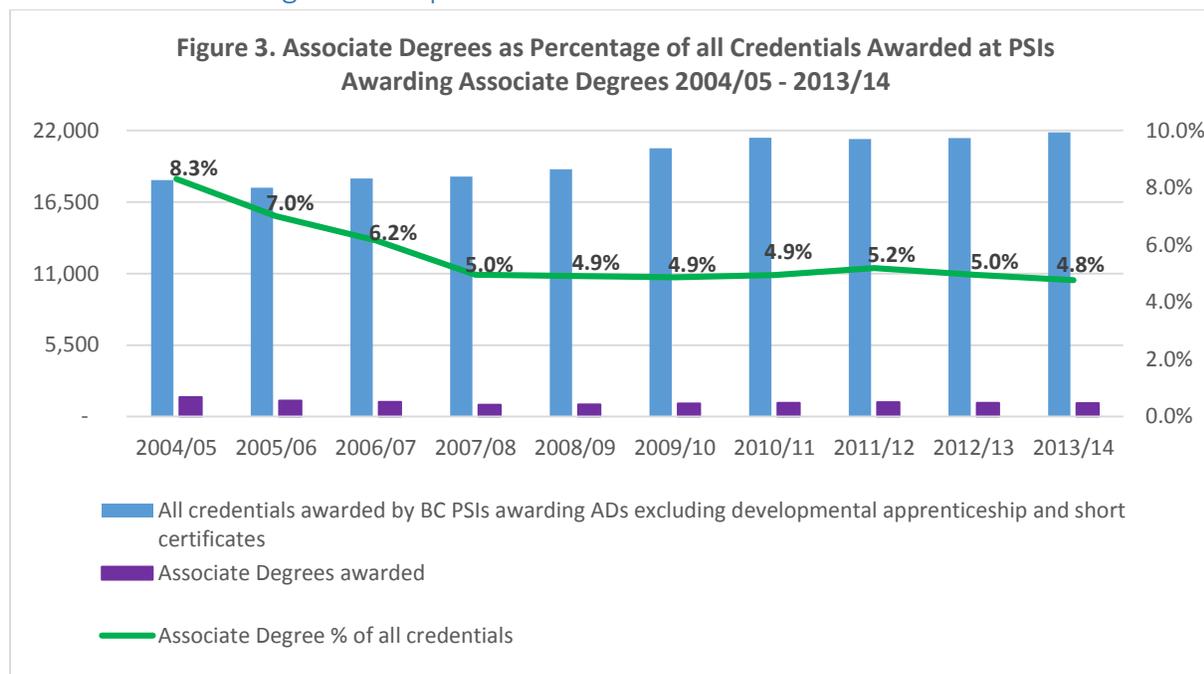
UNBC 2015/16 Academic Calendar. <http://web.uvic.ca/calendar2015-09/uvicCal-Undergraduate-2015-09.pdf> (p.27)

¹² UNBC 2015/16 Academic Calendar. <http://www.unbc.ca/sites/default/files/sections/calendar/2015-2016ugradcalendarversion3.pdf> (p. 25)

¹³ Information provided by Anna Tikina, BCCAT, September 2015

¹⁴ SFU 2015 Academic Calendar. Undergraduate Admission. <http://www.sfu.ca/students/calendar/2015/fall/fees-and-regulations/admission/undergraduate-admission.html>. Associate degree holders may take advantage of a minimum admission GPA which is .25 lower than that required of non- associate degree holders. SFU provided

1.3 Associate Degrees Compared to Other Credentials Awarded in BC



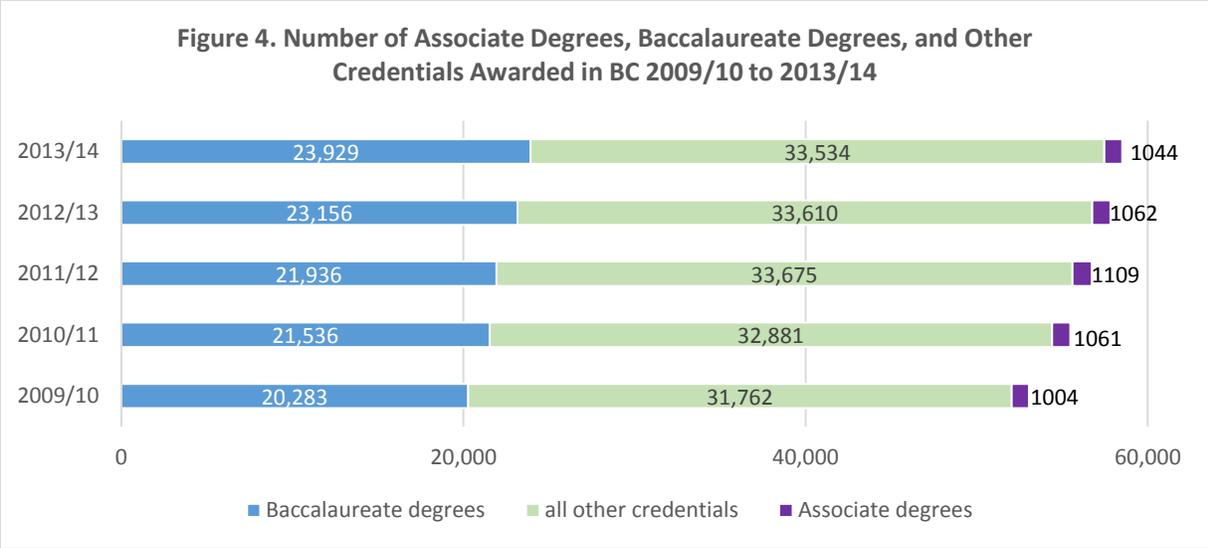
Note: Figure 3 shows only data from institutions which awarded associate degrees at any time between 2004/05 and 2013/14.

Seventeen BC public postsecondary institutions¹⁵ have awarded associate degrees since 2004/05 when associate degrees comprised 8.3% of all the credentials they awarded. The proportion dropped to 5% in 2007/08 and has remained close that level since. The actual number of associate degrees awarded has been quite stable (See Figure 1) since 2009/10 while the number of other credentials awarded by those institutions has increased by approximately 20% (Figure 3).

When the credentials awarded by all BC public postsecondary institutions are counted, the number of associate degrees comprises less than 2% of the total number of credentials (excluding developmental, apprenticeship and short certificates) awarded over the past five years. Baccalaureate degrees comprised almost 41% of all credentials in 2013/14, almost three percentage points higher than in 2009/10. While the number of all other credentials awarded in BC (excluding developmental, apprenticeship and short certificates) increased by almost 2,000 between 2009/10 and 2013/14, their proportion fell to just over 57% from almost 60% in that five year period (Figure 4).

data on its associate degree transfers in its December 1999 profile report, but combined them with college students in more recent profile reports in 2004, 2008 and 2013. See BCCAT website: publications.

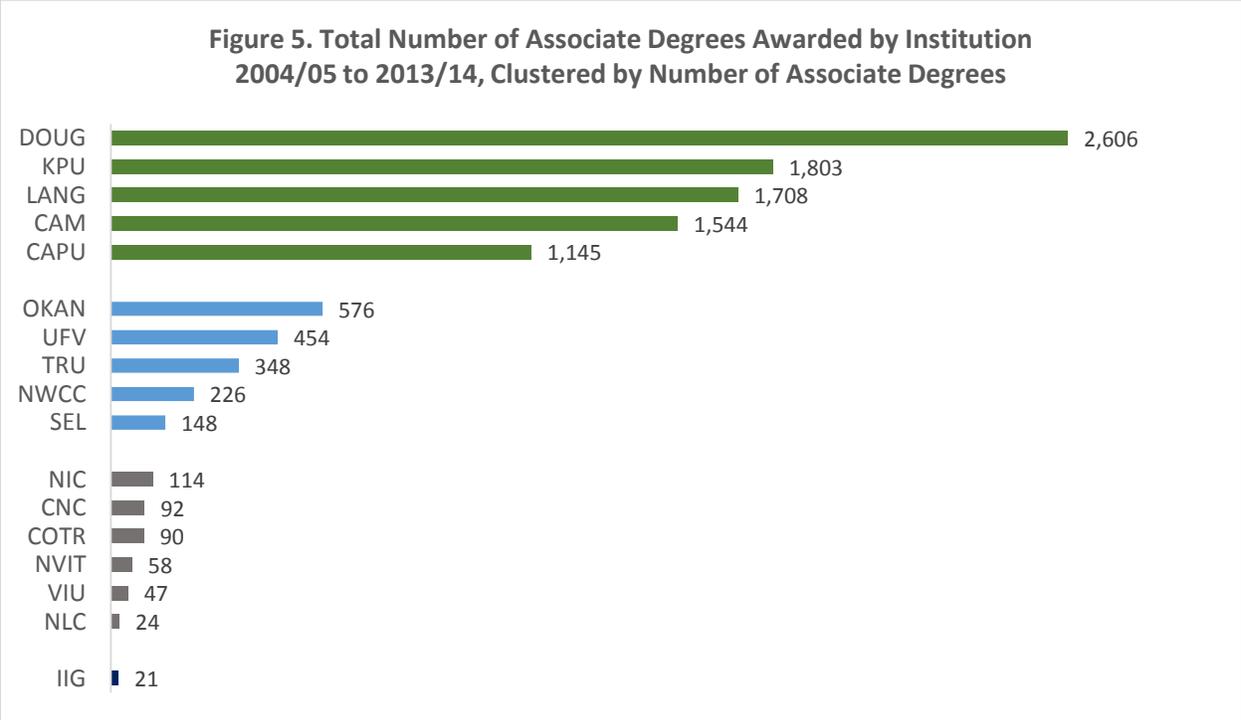
¹⁵ Institutions awarding associate degree since 2004/05: Camosun, Capilano, CNC, COTR, Douglas, IIG, KPU, Langara, NIC, NLC, NVIT, NWCC, Okanagan, Selkirk, TRU, UVV, and VIU



Note: Data for Figure 4 drawn from the STP database, September 2015

1.4 Production of Associate Degrees in BC

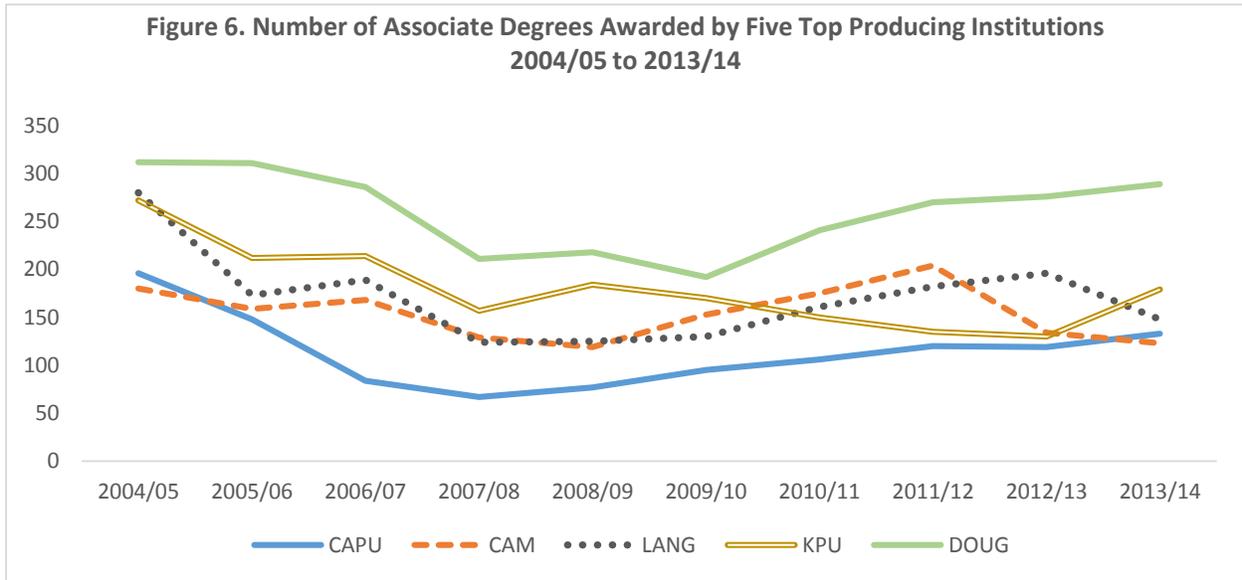
Five¹⁶ of the 17 institutions that have awarded the associate degree since 2004/05 awarded 80% of the credentials between 2004/05 and 2013/14 (Figure 5). All are in urban areas of the province with proximity to research-intensive universities.



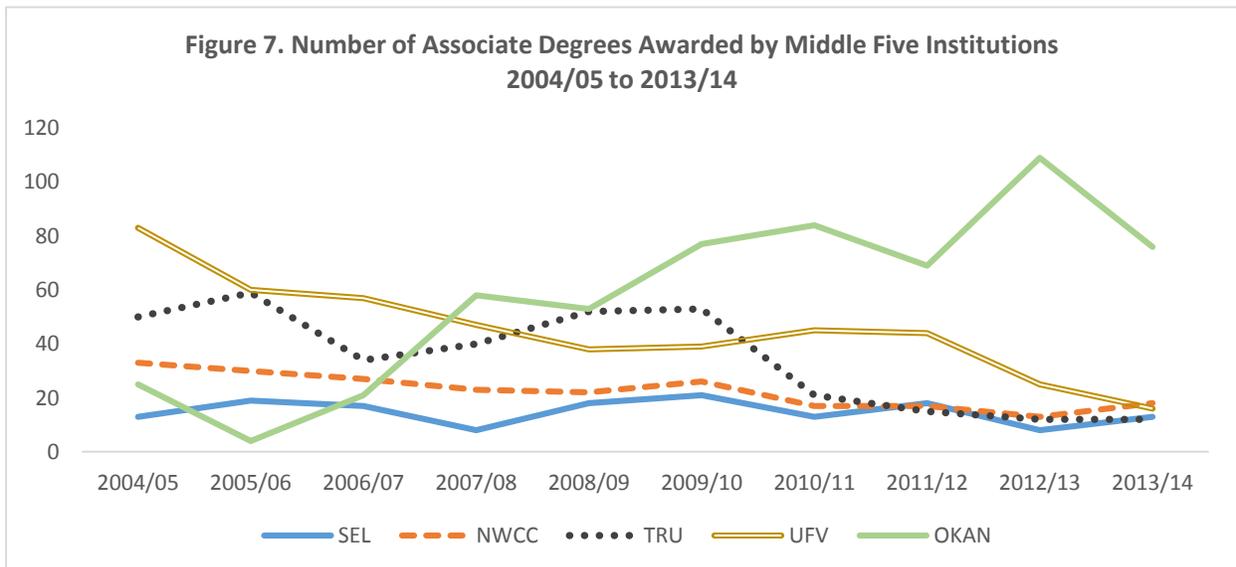
Note: Data for Figure 5 drawn from the STP database, September 2015

¹⁶ Camosun, Capilano, Douglas, KPU, Langara

Over the past ten years the trends in the number of associate degrees awarded by each institution have varied widely.¹⁷ For clarity, the data are presented in three groups: Figure 6 shows trends at the top five producers of associate degrees (between 1,145 and 2,606 in the ten year period shown); Figure 7 shows trends at the five mid-range producers (between 148 and 576 degrees over the same period); and Figure 8 shows the trends at the six lowest producers of associate degrees (between 24 and 114).¹⁸ Some of the institutions in this group awarded no associate degrees in one or more of the ten years.



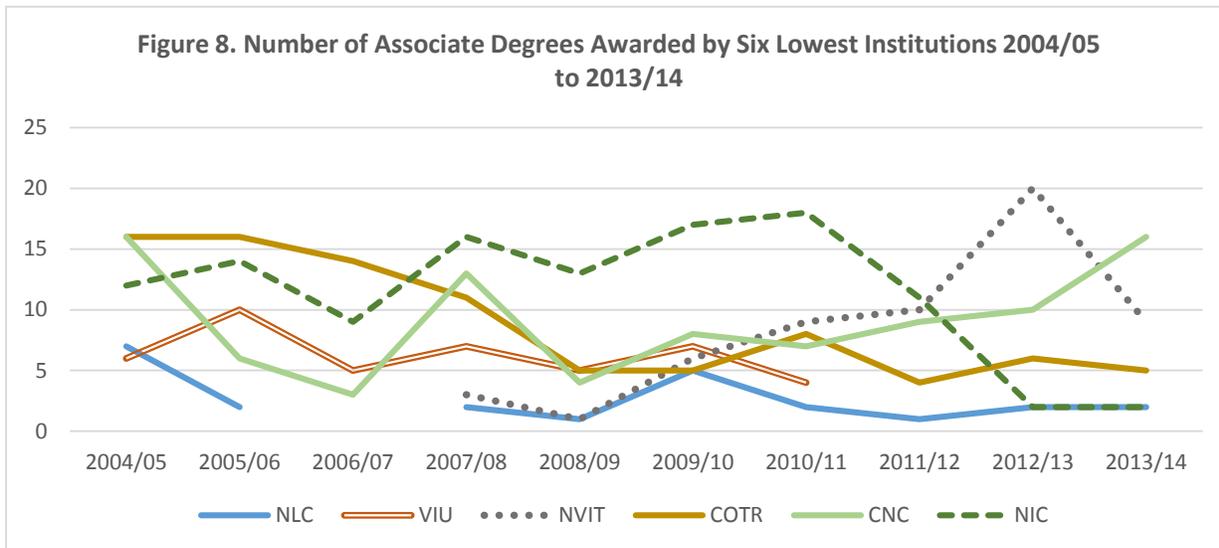
Note: Data for Figure 6 drawn from the STP database, September 2015



Note: Data for Figure 7 drawn from the STP database, September 2015

¹⁷ It seems likely that the reasons are institution-specific, but there are no documents that confirm or refute that assumption. Item 3.1.4 on p.19 suggests investigating the reasons for these differences.

¹⁸ NOTE: The Institute of Indigenous Government (IIG) is not included in these groups as it has ceased operation and has awarded no associate degrees since 2005/06; its data are included in the totals in Figures 1, 2, 3, 4 and 5.



Note: Data for Figure 8 drawn from the STP database, September 2015

A table showing the numbers of associate degrees produced by each institution for each year from 2004/05 through 2013/14 is in Appendix A.

1.5 Field of Study of Associate Degrees in BC

The majority (98%) of the 5,258 associate degrees awarded in the five-year period between 2009/10 and 2013/14 are coded to the Arts and Sciences CIP Program Cluster.¹⁹ Data from five institutions indicate that they also awarded associate degrees in other CIP Program Clusters: Business and Management, Computer and Information Sciences, Natural Resources and Conservation, Health, Human and Social Services, and Visual and Performing Arts. A total of 85 of these associate degrees were awarded in applied fields between 2009/10 and 2013/14 (2% of all associate degrees awarded in that period).

In 2013/14, eleven institutions coded all of their associate degree programs as CIP 24: Liberal Arts and Sciences, General Studies and Humanities, a category that covers a broad range of disciplines. This coding convention complicates analysis of the different fields of study in which associate degrees are awarded at those institutions.

A detailed look at associate degrees awarded in 2013/14 using the Student Transitions Project (STP) credential program description (PSI CRED_PROG_DESC) coding category provides details of the associate degrees awarded in the Arts and Sciences CIP Program Cluster. The data from 2013/14 indicate that 831 associate of arts degrees were awarded (80% of the total) and 174 associates of science (17%) of the total. Three of the high producing institutions coded their associate degrees to the more specific two-

¹⁹ In BC the Classification of Instructional Programs (CIP) codes have been grouped into 11 CIP Program Clusters for consistent groupings of reported program data. Most BC CIP Program Clusters contain more than one CIP two-digit code to allow for more precise descriptions of the field of study when those are needed. The CIP code structure is used internationally.

digit CIP code within the Arts and Sciences CIP Program Cluster. For 522 of the associates of arts and 34 of the associates of science awarded, the discipline was identified. Associate degrees awarded in applied disciplines were sometimes called an Associate of Arts and in other cases an Associate of Science. For 39 associate degrees it isn't clear which degree was awarded. Virtually all associate degrees are awarded in Arts or Science, not surprising as the credential was established for these programs. See Appendix B for the full table of associate degrees awarded in 2013/14.

1.6 Students Seeking and/or Earning an Associate Degree

No analysis of the gender, age, time in the program, domestic or international status, GPA, or other descriptive characteristics of BC associate degree students is readily available. Much of these data exist in the Central Data Warehouse (CDW), and subject to the limitations introduced by the coding conventions outlined above, such an analysis would provide an understanding of who seeks an associate degree.

An analysis of data from the Diploma, Associate Degree and Certificate Student Outcomes (DACSO) survey carried out in 2012 to support the Associate Degree Review Steering Committee indicated that most of the associate degree students had gone on to further study, although a caution was included about the precision of the data.²⁰ The STP database allows tracking of associate degree students from one institution and program to another allowing researchers to accurately describe the associate degree students' further education pathways and achievement at a BC public postsecondary institution. Subject to the challenges presented by program coding (as outlined earlier), this would give insights into the credential's uses.

In a report published by BCCAT in June 2000, John Dennison, a noted scholar of the community college and, in particular its transfer function, suggested that "...the Council [now referred to as BCCAT] commission a set of research projects involving the associate degree to determine, for example, how students view the associate degree as a program advantage to their career interests."²¹ Sixteen years later this still seems like a good idea. The BC postsecondary system needs to know what students think about the associate degree and why they choose to take it if the success measures devised are not to fall short of assessing the important aspects of the program from the perspective of the "client."

²⁰ Review of the BC Associate Degree, Final Report of the Associate Degree Review Steering Committee, BCCAT, January 2013. P.10-11

²¹ Dennison, John D. (June 2000) Student Access and Mobility Within the British Columbia Post-Secondary System, A Critical Analysis of Research, Public Policy and the Role of the B.C. Council on Admissions and Transfer, BCCAT, Vancouver, BC, p. 31

Section 2. Associate Degree Programs in Canada and Other Jurisdictions

2.1 Canada beyond British Columbia

The associate degree is little known in the rest of Canada. A few associate degrees are offered by individual institutions across the country, all in applied fields of study. Most of those are designed to facilitate transfer to a specific baccalaureate program.²² Alberta, whose college system is most like British Columbia's, has programs of study at community colleges that are designed for transfer to research universities. According to the website produced by Alberta Learning, Province of Alberta,²³ "University Transfer" is considered a program, but does not have a credential attached.

In Quebec, the CEGEPs offer a pre-university college diploma, a two-year program that prepares the student for university studies. The CEGEPs also offer a three-year college diploma for technical or career studies designed to prepare graduates for the work force.

In Statistics Canada data sets²⁴, the associate degree is counted with two-year diplomas and certificates making its popularity and its labour market outcomes impossible to measure at a national level. As it's not listed as a separate qualification for national listings of occupations, the recognition and utility of the associate degree in the Canadian labour market cannot be readily assessed.

2.2 United States of America

Associate degrees were first awarded in the USA in the late 1800s, and by 1956 associate degrees were awarded in virtually every state.²⁵ In general, associate degrees were designed to provide a credential confirming two years of study and are generally transferable to a four-year college towards a bachelor's degree.

Between 1992/93 and 2012/13, the number of associate degrees awarded in the USA increased almost 59%, a much greater rate of increase than the number of bachelor's degrees awarded (35%). In 2012/13 1,006,961 associate degrees were awarded in the USA. (Figure 9)

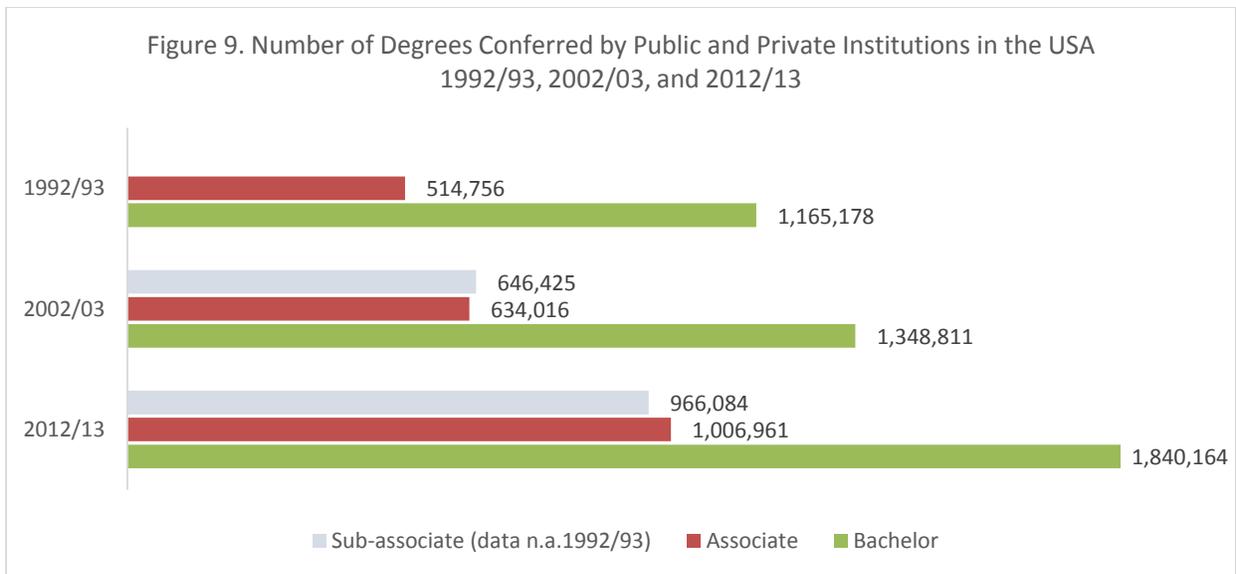
Many jurisdictions in the USA offer applied associate degrees in arts and in sciences in addition to associate degrees in the traditional academic fields. In some, though not all, states the applied associate degrees are not designed for transfer to a baccalaureate program.

²² Transferability and Post-secondary Pathways. The Role of Canadian Colleges and Institutes, (April 2011) Association of Canadian Community Colleges, Ottawa

²³ Study in Alberta, Post-secondary education/ what can I study? <http://www.studyinalberta.ca/post-secondary/what/> (downloaded 1 December 2015).

²⁴ Post-Secondary Student Information System, Labour Market Survey, National Graduate Survey, Youth in Transition Survey, National Occupation Code: for details about these datasets see Appendix C

²⁵ Forest, James J.F. and Kevin Kinser. (2002) Higher Education in the United States: An Encyclopedia, A-L.ABC-CLIO p. 90-92.



Data for Figure 9 drawn from Degrees Conferred by Public and Private Institutions, Table 318.40. Digest of Education Statistics 2014, U.S. Department of Education, National Centre for Education Statistics, Integrated Postsecondary Education Data System (IPEDS)

A review of the field of study of the over one million associate degrees conferred in 2012/13, reveals that 34% (344,091) were coded Liberal Arts and Sciences, General Studies, and Humanities (CIP 24); 21% were in Health Professions and Related Programs (CIP 51); and 13% were in Business (CIP 52).²⁶ The remaining 32% were distributed over a wide range of fields. See Appendix D for details. This is a very different profile than is presented by associate degrees in British Columbia (Appendix B).

Many of the published studies of the utility of an associate degree in the USA focus on the extent to which graduates transfer and are successful in a baccalaureate program. A number of studies assess the labour market outcomes and benefits of associate degrees in the USA. Caution is required when reviewing some studies of the labour market outcomes of associate degrees as results can differ widely depending on the field of study. For example, for many years most registered nurses in the USA had received associate degrees in Nursing,²⁷ a field producing relatively high related employment and earnings.

The associate degree is widely recognized by national and state data gathering organizations in the USA, making it possible to assess labour market demand for, and economic benefits of, the qualification in the USA. See Section 4: Annotated Bibliography for selected studies.

²⁶ Degrees Conferred by Public and Private Institutions, Digest of Education Statistics 2014, Table 318.50. Degrees conferred by postsecondary institutions, by control of institution, level of degree, and field of study: 2012-13. U.S. Department of Education, National Centre for Education Statistics, Integrated Postsecondary Education Data System (IPEDS)

²⁷ Fulcher, Roxanne and Christopher M. Mullin. (March 2011) A Data-Driven Examination of the Impact of Associate and Bachelor's Degree Programs on the Nation's Nursing Workforce; AACC Policy Brief 2011-02PBL. p4.

2.3 Australia

Australia added the Associate Degree to the Australian Qualifications Framework in 2004. The growing need for people trained for paraprofessional occupations in the country was cited for its establishment. The associate degrees, which are described as “dual-sector” or crossover qualifications, appear to be a creature of the Vocational Education and Training sector; but are sometimes offered in conjunction with a university or by a “mixed sector” institution. While primarily applied in focus, the associate degree in Australia is designed to allow transfer to baccalaureate degree. In 2010, few institutions were offering associate degree programs and they accounted for only .12% of total vocational enrolments. A number of logistical issues are cited as preventing wider provision of the associate degree: these include sectoral differences (VET and tertiary), governance structures, cost, support services, and union restrictions.²⁸

2.4 Europe

The United Kingdom, Republic of Ireland and Scotland all offer two-year programs at the sub-baccalaureate level (Foundation Degree in the UK²⁹; Diploma of Higher Education in Scotland³⁰; and the Higher Certificate in the Republic of Ireland³¹). All programs of this sort appear to have an applied focus, often developed in consultation with employers; some allow for transfer of credits to a baccalaureate degree program. All appear in the Qualifications Frameworks for their countries and are covered by their Quality Assurance processes. Promotional materials describe the British Foundation Degrees as an access opportunity for adult learners.

While references were found to a two-year General Academic Studies Degree offered in France, no authoritative description of this qualification in English was located.

An associate degree program was piloted in the Netherlands beginning in 2005. It is offered only in the universities of applied sciences as an intermediate qualification within the professional bachelor’s degrees. It was developed with considerable involvement of industry and employers, and is designed to meet labour market demand for short, flexible programs that raise workforce qualifications of both students leaving high school and adult workers, providing access to a university to students whose secondary schooling would ordinarily not, and thus increase social mobility and expand educational opportunities for underrepresented student populations³².

²⁸ Callan, Victor & Kaye Bowman. (2013). Issues for VET providers delivering associate and bachelor degrees: literature review. National Centre for Vocational Education, Adelaide

²⁹ Universities & Colleges Admissions Service (UCAS). <https://www.ucas.com/ucas/undergraduate/getting-started/what-study/foundation-degrees>

³⁰ The Scottish Credit and Qualifications Framework. <http://www.scfq.org.uk/framework-diagram/Framework.htm>. **Please note** that Scotland has a higher education system and Quality Assurance processes independent and distinctly different from those in England, Wales and Northern Ireland (UK).

³¹ National College of Ireland. <https://www.ncirl.ie/Courses/Course-Details/course/Higher-Certificate-in-Business-HCB>

³² Daale, Hans. (2015) Short-Cycle Higher Education in the Netherlands: Adoption and Implementation of the New Associate Degree Qualification. Community College Review 38(2), 176-195

In European Framework terms, these programs would all be called a short-cycle higher education program.

2.5 Hong Kong

As part of initiatives to achieve its goal of increasing the proportion of traditional college age students obtaining a postsecondary qualification from 34% to 60% in ten years, the government of Hong Kong introduced community colleges and with them associate degrees in 2000. The stated goal was to improve the qualifications and thus the competitiveness of the population. The demand for associate degrees has been strong: in 2001/02 there were 8,600 graduates (of which 88% were publically funded) and just five years later the number had doubled to 17,244 (of which 46% were publicly funded). The study areas are wide-ranging including general arts and humanities, science, social sciences, health, business, information technology and engineering. Associate degrees provide graduates the option of going into the work force or into a baccalaureate degree program at a university.³³

The government of Hong Kong has not expanded its universities and has maintained the number of first-year first-degree places at Government-funded universities at 14,500 each year, approximately 18–20% of college age students, since 1995. While the transfer function of associate degrees appears to be very attractive to students, the Hong Kong Education Bureau has allowed only a limited number of senior-year places in publicly-funded universities for the transfer of associate degree graduates. With an increasing number and proportion of Hong Kong students completing associate degrees, the growing demand for transfer to a baccalaureate program has led to a rapid expansion of the private university sector in Hong Kong.³⁴

2.6 West Indies

Associate degree programs were launched in the West Indies by the Caribbean Examinations Council in 2005. They are described as providing coherent programs of study in nine areas, typically of two years' duration. The stated aims include providing a credential that includes work place knowledge and skills, articulation with other tertiary level programs, and flexible study options.³⁵ Mature learners appear to be the target audience for the credential. One study examined the relationship between students' university studies at the University of the West Indies and their qualifications (Advanced Level in secondary school or community college associate degree) at the time of entry and their subsequent performance at the University of the West Indies and found none. The study concludes that the West Indies associate degree provides adequate preparation for university studies.³⁶

³³ Education Post. <http://www.educationpost.com.hk/level/associates-degrees>. Extracted 15 december2015

³⁴ Yi-Lee Wong. (2015) *Community College Policy in Hong Kong: Intention, Practices, and Consequence*, Community College Journal of Research and Practice, 39:8, 754-771, DOI:

³⁵ Caribbean Examinations Council Press Release, 16 March 2005. https://www.cxc.org/associate_degrees_2005

³⁶ St. Rose, Kieran W. (2013). *Undergraduate Performance of Advanced Level and Associate Degree Students: A Comparative Analysis*. Community College Journal of Research and Practice 37 (10): 780–93.

2.7 Lessons for British Columbia

This section of the report is intended to provide an overview of how, and for what purpose, the associate degree or equivalent type of credential has been implemented in other jurisdictions to give background and context to readers interested in doing further reading on the topic.

The bulk of the recent, accessible literature on associate degree outcomes comes from the USA³⁷ and provides a varied and complex view of a range of measures of associate degree effectiveness. While some studies describe the implications of policy on associate degrees, others describe labour market, further education, and social mobility outcomes, and still others mention, or more often assume, goals for the program, but not measures or criteria of the program success. The quality of the associate degree and its impact on access to higher education and social mobility are examined by others.

Most of the documents referenced in footnotes in this section related to associate degrees and similar credentials in other jurisdictions are primarily descriptive. In some cases, the purposes of the credential are articulated, but there are no suggested measures. Others speak in aspirational terms about the goals of programs which scarcely exist at the time of writing.

Even in studies where an associate degree program goal, criteria of success, and measured outcomes were identified or implied, the context in which the program exists is often so different from the BC context that the measure as defined or applied would have limited applicability to associate degree programs here. However, insights into potential measures for BC associate degree programs can be gleaned from the literature, and some possible approaches to measure the success of associate degree programs in BC are discussed in Section 3.

³⁷ See Section 4: Annotated Bibliography

Section 3. Potential Approaches to Measuring the Success of BC Associate Degrees

3.1 Understanding the Appeal of the Associate Degree to Students

Before work is undertaken to measure the success of the associate degree program in BC, it seems useful to understand who chooses this credential and why. A data-based description of the students who pursue or are awarded an associate degree augmented with students' accounts of what motivated them to do so and what their experiences were once they had completed would provide helpful insights to inform the development of appropriate measures of the success of associate degree programs. The following data collection and analyses could be good starting places.

3.1.1. Demographic profile

Using the CDW and the STP databases, construct profiles of associate degree recipients over the past five years. The data should be as detailed as possible as there may be important differences among groups of students that are not immediately apparent from larger aggregations.

3.1.2. Survey of associate degree recipients

A survey of students who have sought and/or earned an associate degree to ask their reasons for choosing this credential would provide information to base measuring the program's success from the student's perspective. It could perhaps also suggest desirable policy changes.

3.1.3. Ascertaining labour market recognition of the associate degree

The Associate Degree Review Report cites respondents as believing that employers value this credential³⁸, but no research has been found to verify this. Persistent anecdotal evidence suggests that employers and the general public in British Columbia have no knowledge of the associate degree. This discrepancy could be resolved with an appropriate survey.

3.1.4. Investigate institutional practices

The marked differences in the number and proportion of associate degrees awarded at different institutions warrants investigation. Do institutional practices contribute to the variance? What are the impacts of these practices on students? What other factors influence students' decisions at these institutions?

3.2 Potential Success Measures for the Associate Degree in BC

The literature reviewed on the associate degree in the USA suggests a number of different approaches to measuring its success that vary primarily with the interests of the researchers. Few reports of regularly collected measures of the success of associate degree programs (performance indicators) were located. The measures proposed in Table 1 represent a number of possibilities that could be used in BC given the purposes of the associate degree that have been articulated over the past fifteen years. Please note that the goals in this table are conjectural as no definitive statement of agreed upon goals for the associate degree in BC has been confirmed since 2000.

³⁸ Review of the BC Associate Degree, Final Report of the Associate Degree Review Steering Committee, BCCAT, January 2013. P.9

Table 1. Summary of Potential Success Measures

Goal to be Measured	Potential Measure	Suggested Criteria for Success
<p>1. Continuation to a higher level of study / credential</p>	<ul style="list-style-type: none"> ▪ Proportion of students awarded an associate degree who take further studies ▪ Proportion of students awarded an associate degree who complete a higher credential 	<ul style="list-style-type: none"> ▪ Proportion will be equal to or exceed a comparator group matched for number of credits & GPA. ▪ Proportion will be equal to or exceed a comparator group matched for number of credits & GPA. ▪ Proportion will be equal to or exceed a comparator group of traditional transfer students.
<p>2. Quality of associate degree program</p>	<ul style="list-style-type: none"> ▪ Time to completion of higher credential ▪ GPA at end of the 3rd and of the 4th years of study 	<ul style="list-style-type: none"> ▪ Proportion will be equal to or exceed a comparator group matched for number of credits & GPA. ▪ Proportion will be equal to or exceed a comparator group matched for GPA. ▪ Proportion will be equal to or exceed a comparator group of traditional transfer students.
<p>3. Labour market outcomes</p>	<ul style="list-style-type: none"> ▪ Employment earnings ▪ Weeks of employment in the twelve months following graduation with an associate degree ▪ Employment level will be appropriate to credential level 	<ul style="list-style-type: none"> ▪ Annual earnings will be equal to or exceed those of a comparator group of students with 1 year certificate or 1 year of academic studies or 2 years of academic studies without a credential. ▪ Weeks of employment will be equal to or exceed those of a comparator group of students with 1 year certificate or 1 year of academic studies or 2 years of academic studies without a credential. ▪ Associate degree holders will be employed in occupations requiring NOC Skill Level B or higher.
<p>4. Civic engagement</p>	<ul style="list-style-type: none"> ▪ Involvement in community, charitable, political, or similar activities ▪ Voting activity 	<ul style="list-style-type: none"> ▪ Associate degree holders will have rates of involvement that are equal to or exceed high school graduates' rates. ▪ Associate degree holders will vote at a rate that are equal to or exceed high school graduates' rate.

<p>5. Access and / or Social Mobility</p>	<ul style="list-style-type: none"> ▪ The associate degree attracts and / or enables students to achieve levels of postsecondary education unlikely if the program did not exist ▪ The associate degree is a less costly route to a baccalaureate degree ▪ The associate degree provides access for students whose secondary school preparation would not have allowed them to enter a baccalaureate program directly. 	<ul style="list-style-type: none"> ▪ Students enrolled in associate degree programs have an attrition rate lower than students in academic programs not leading to a credential and lower than students in the first and second years of a baccalaureate program. ▪ A higher proportion of students with any of the following characteristics will receive an associate than a baccalaureate degree: aged over 40; identified as Aboriginal; family identified as lowest quartile socio-economic group. ▪ The cost of a baccalaureate degree for students who first achieved an associate degree is less than for students who enrolled directly in a baccalaureate program. ▪ Proportion of students with inadequate secondary school preparation who achieve a baccalaureate degree via an associate degree will be equal to or exceed a comparator group matched for high school GPA who achieved a baccalaureate degree through direct entry.
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3.3 Review of Available Data Sources

Several of the research studies on the economic impact of the associate degree from the USA included in the annotated bibliography section of this report are dependent on conditions not currently available in BC. For example, the sheer size of the samples (44,000 -800,000) analyzed allow for statistical analyses not possible with cohorts of 1,000 to 1,100; the ability to link institutional transcript data with employment insurance data, financial aid data, and national tracking data makes detailed and nuanced analyses possible; and transcript data that appear to have more demographic information than is the case in BC. The USA literature notes the variations in performance of students with different types of associate degrees.

Nonetheless, some analysis of BC associate degree outcomes can be done to measure the goals listed in Table 1. This section of the report reviews the data sources that are available in BC and their current suitability for implementing potential measures of the success of the associate degree.

3.3.1 For Measuring Transfer to a Baccalaureate Program

If the objective of the associate degree is transfer to a baccalaureate program at another, or the same, institution, then the proportion of associate degree recipients transferring and their success in the upper years of their baccalaureate program provide good measures of the program's success. It is important that BC research be based on as much detail as possible to allow any variations among sub-groups of associate degrees to be apparent.

Using Student Transitions Project Data

Through the Student Transition Project (STP) database students can be followed from any British Columbia public postsecondary institution to another in the province. The database includes the programs students have enrolled in at different times and the credentials they have received. Thus recipients of associate degrees who transfer to another BC public postsecondary institution, or to another program, and any credentials earned subsequently, can be tracked.

Limitations: Currently, the STP does not collect postsecondary institution GPA or credit information making it impossible to compare the role of these important factors in the upper year or transfer performance of associate degree completers to that of other transfer students or direct entry students. The STP Steering Committee has recognized that these measures are important in addressing a variety of research questions and has recently agreed to begin the process of integrating post-secondary credits and GPA into the annual STP collection cycle.

Remedy: Until the STP database includes credit and GPA data from all postsecondary institutions, perhaps a one-off study linking institutional data to the STP could be undertaken.

Using Transfer Studies

The academic progress of students transferring from a college or other public postsecondary institutions in the province to BC research universities has been a topic of interest since the earliest days of transfer programs at colleges (1966).³⁹ Under the aegis of BCCAT the research universities have produced reports on the academic achievement of transfer students from 1991-92 to the present. These reports have focussed primarily on students who met the definition of a "traditional transfer student,"⁴⁰ and provided information about grades, time to completion, and credentials achieved compared to those of direct entry students. These reports served to dispel concerns that transfer students were less academically able than their direct entry student colleagues. The teaching-intensive universities have never produced reports on the academic achievement of students transferring to them.

Limitations: The transfer profile studies do not provide data comparing the performance of associate degree students to that of other transfer students at the research-intensive universities to

³⁹ Dennison, John D. Student Access and Mobility Within the British Columbia Post-Secondary System, BCCAT, June 2000, p. 24

⁴⁰ "See definition Section 2, age 2, footnote #6

allow assessment of the value added by the associate degree. It appears that, apart from UNBC, the research-intensive universities do not capture associate degree status. The teaching-intensive universities cannot easily identify any transfer student in their databases.

Remedy: Ensure that associate degree holders can be easily identified by both research- and teaching-intensive universities to facilitate follow-up research into their post-associate degree studies at all BC postsecondary institutions.

3.3.2 For Measuring Labour Market Outcomes

Measuring the labour market success of associate degree holders would enlarge the understanding of that aspect of the credential. To be useful the analysis needs to include the field of study of the associate degree as different labour market outcomes are likely for associate degrees in applied fields of study than in arts and sciences.

Using Provincial BC Student Outcomes Data

Much information about former students and graduates' further education activities and labour market activities can be gleaned from the annual Diploma, Associate Degree and Certificate Student Outcomes (DACSO) survey. The survey gathers feedback from students across the province, nine to twenty months after they leave a diploma, associate degree, or certificate program.⁴¹

For the analysis in support of the Associate Degree Review Steering Committee in 2012⁴², BCCAT analyzed a subset of data drawn from the annual survey. It compared students who had been registered in programs leading to associate degrees, diplomas, and other credentials before leaving their institution. Each year during 2007-2011, between 1,680 and 2,140 respondents were classified as associate degree and "university transfer" students. This cohort contains every student who had completed at least 24 credits and not returned to their institution. Data from the STP shows that between academic years 2006/07 and 2011/12 the number of students awarded associate degrees ranged between 1,128 and 1,109,⁴³ suggesting that many students in the DACSO group had not received associate degrees although they were enrolled in a program that potentially had that outcome. As well as employment outcomes, the DACSO survey data provides information about students' educational plans and their assessment of their program, both useful to understanding the associate degree program.

Limitations: The DACSO cohort descriptive data received by BC Stats do not appear to allow for reliable identification of associate degree recipients in the survey cohort. The problem may be attributable to student registration and program coding practices at different institutions, or perhaps the credential information in the STP is collected at a different time than that in the DACSO cohort submission. Credits completed are no longer collected. There is not necessarily a

⁴¹ Insights and advice were kindly provided by the BC Stats staff involved in the project; however, they are not responsible for any statements in this report.

⁴² Review of the BC Associate Degree, Final Report of the Associate Degree Review Steering Committee, BCCAT, January 2013. p.10

⁴³ See Appendix A for numbers of associate degrees awarded in BC

correspondence between the programs of study students appear to be registered in for the Registrar's Office and the credential they eventually apply for and receive. Perhaps the term "completer" is applied differently than "credential awarded." It appears that a number of students do not apply for a credential. Programs of study which may lead to an associate degree have different names at different institutions, and these same programs may lead to other credentials. There are many opportunities for ambiguity in the data.

Remedy: Review the program data collection and recording practices at institutions offering the associate degree to find ways of coding so that associate degree students can be clearly and consistently identified.

Using Relevant Federal Government Datasets

A number of US studies of the labour market outcomes of associate degree holders draw on their federal and state governments' data to conduct detailed labour market outcome studies and to infer the level of employer demand for associate degree holders. Unfortunately such data are not currently available in Canada.

Limitations: The Government of Canada does not distinguish associate degrees from other 2-year college or sub-baccalaureate credentials in any of its databases or studies. Thus these datasets are useless for assessing the labour market outcomes of BC's associate degree holders.⁴⁴

Remedy: British Columbia could request that these federal datasets record data for associate degrees distinct from those for two-year diplomas to provide the information needed to assess the labour market outcomes of an associate degree.

3.3.3 For Measuring Enhanced Access and Social Mobility

STP and CDW datasets have some elements: e.g., age, ever-Aboriginal status, and high school GPA, that allow some measures of this goal. Unfortunately other elements important to assess access and social mobility, like socioeconomic status, and financial aid received, are not included. Again, without the credit and GPA data in the STP the approaches to measuring this aspect of associate degrees will be limited and matched comparator groups cannot be established.

3.4. Ensuring Adequate Data Specificity

The limitations of the CIP coding structure have resulted in both associate of arts and associate of science being given the same program code (24.0101). For analysis purposes it would be useful to have an easier way to sort these two credentials. Associates of arts and science in applied fields of study are usually coded to the relevant CIP code, but are called "associate of arts or science in FIELD."

⁴⁴ See Appendix C for details about the relevant Canadian federal government datasets.

An analysis of the coding in the STP for PSI_CRED_PROG_DESC shows that different terms are used for both the credential and the program. In some cases, different two digit CIP codes are given to what appears to be the same credential issued by different institutions.⁴⁵

Remedy: While the CIP coding structure cannot be altered, a review of coding used at the institutions, in the CDW, and in the STP may reveal some changes that would provide greater clarity and consistency for associate degree program and credential coding.

⁴⁵ See Appendix B for details of current coding of associate degree programs

Section 4. Annotated Bibliography

4.1 Associate Degrees in British Columbia

_____ (August 2012). Associate Degree Review Backgrounder. British Columbia Council on Admissions and Transfer (BCCAT).

This background paper was prepared to guide discussion and consultation regarding the Associate Degree.

_____ (January 2013). Review of the B C Associate Degree. Final Report of the Associate Degree Review Steering Committee, for Submission to the Ministry of Advanced Education, Innovation and Technology, BCCAT.

_____ (September 1988) Access to Advanced Education and Job Training in British Columbia, Report of the Provincial Access Committee, Victoria, BC

4.2 Associate Degrees in Other Parts of Canada

_____ (April 2011) Transferability and Post-secondary Pathways. The Role of Canadian Colleges and Institutes, Association of Canadian Community Colleges, Ottawa,

This report describes pathways established by colleges across the country to facilitate transferability and mobility for their students to move from high school to and among college certificate and diploma programs and to and among degree programs. The paper also reviews processes used in the United States, Australia, and the European Union to allow students to transfer credits from one institution to another.

4.3 Associate Degrees in the USA

4.3.1 Goals and Frameworks in the USA

_____ (October 2014) Lumina Foundation. The Degree Qualifications Profile. Indianapolis, IN. *A learning-centered framework outlining what college graduates should know and be able to do to earn any associate, bachelors or master's degree. Contains a useful bibliography regarding qualifications frameworks*

_____ (February 2012) University of Wisconsin System Associate Degree Standards Working Group: Findings and Report.

The review is intended to shape the learning expected of all associate degree students and establish consistency of associate degree standards across the University of Wisconsin (UW) System so that employers and the public can have confidence in the preparation of associate degree graduates to successfully serve their communities and the public. The UW System awards associates of arts, of science, and of applied science. Mention is made of the role of associate

degrees in providing access to non-traditional and working adults. The role of the associate degree is explored. There is no discussion of success factors to be measured.

4.3.2 Educational Outcomes in the USA

Chase, Megan M. (2011) Benchmarking Equity in Transfer Policies for Career and Technical Associate's Degrees; Community College Review 39(4) 376 –404.

Using critical policy analysis, this study considers state policies that impede technical credit transfer from public 2-year colleges to 4-year institutions of higher education. The states of Ohio, Texas, Washington, and Wisconsin are considered, and seven policy benchmarks for facilitating the transfer of technical credits are proposed.

Crook, D., Colin C. Chellman, and Aleksandra Holod. (2012) Does Earning an Associate Degree Lead to Better Baccalaureate Outcomes for Transfer Students? The City University of New York Office of Policy Research.

This paper explores transfer behaviour and success of associate students and raises questions about the influence of transfer policies in place in a state. It notes that previous assessments of the influence of transfer policies have been hampered by insufficient data or small sample sizes that prevent relevant distinctions.

Ehrenberg, Ronald G., and Christopher L. Smith. (2004). Analyzing the Success of Student Transitions from 2- to 4-Year Institutions within a State. Economics of Education Review 23 (1): 11–28.

This paper presents a methodology to evaluate how well 2-year public institutions are preparing students to succeed in their 4-year program when they transfer. The methodology is illustrated using data provided by the Office of Institutional Research and Analysis of the State University of New York. The authors also suggest factors they suspect are relevant that are not addressed in the methodology presented.

Jaeger, David A. and Marianne E. Page. (Nov. 1996) Degrees Matter: New Evidence on Sheepskin Effects in the Returns to Education; The Review of Economics and Statistics, Vol. 78, No. 4, pp. 733-740
Published by The MIT Press.

This study used a sample of over 18,000 individuals to explore the economic effects of different degrees and years of education. It examined race and gender as well as the type (or field of study). The study found that the “sheepskin” has more effect than years of study alone, and that the effects of race and gender are not consistent across all levels of degree and fields of study.

Monaghan, David B. and Paul Attewell. (2014) The Community College Route to the Bachelor's Degree. Educational Evaluation and Policy Analysis Month 201X, Vol. XX, No. X, pp. 1 –22 DOI: 10.3102/0162373714521865 © 2014 AERA. <http://eepa.aera.net>.

This study tracks for six years a nationally-representative cohort of first-time freshmen who entered college in 2004 to identify why students who enter at a community college are less likely than first-entry students to complete a bachelor's degree. It includes analyses of longitudinal transcript data as well as a number of socioeconomic factors: e.g., race, household income, parental education, and financial aid. The study does not look at associate degree holders separate from other students transferring from a college; it concludes that a major factor in non-completion is credit loss in transfer.

Digest of Education Statistics 2014, U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Washington, D.C.

The Digest is a compilation of statistical information covering education in the USA from prekindergarten through graduate school. It includes a selection of data, nationwide in scope, from many sources, both government and private, and draws especially on the results of surveys and activities carried out by the National Center for Education Statistics (NCES). Supplemental information on population trends, education characteristics of the labor force, attitudes on education, government finances, and economic trends provides background for evaluating education data.

Information collected by the Integrated Postsecondary Education Data System (IPEDS) from every college, university, and technical and vocational institution that participates in the federal student financial aid programs is analyzed by the National Center for Education Statistics and included in the Digest.

Taylor, Jason L. (2013). The Potential Value of a Reverse Transfer Associate Degree: Diverse Values and Perspectives. Urbana, IL: Office of Community College Research and Leadership, University of Illinois at Urbana-Champaign.

This article defines reverse transfer as the phenomenon of students who transfer from a two-year to a four-year institution without having earned an associate degree and then transfer the credits earned at the four-year institution back to the two-year for associate degree conferral. Students may not complete a baccalaureate degree. The author believes that the associate degree is a milestone during the progression to a bachelor's degree, and the receipt of an associate degree after transfer can motivate students to persist toward the bachelor's degree. This logic is partially supported by descriptive data suggesting that a higher proportion of transfer students with an associate degree also receive a bachelor's degree, relative to students who do not obtain an associate degree before transfer.

Thomas, J. Phillip. (2012) Seamless Transfer or crooked seams? The differentiated outcomes of associate's degree types completing the baccalaureate degree. Digital Repository @ Iowa State University, Graduate Theses and Dissertations.

This study examines the academic outcomes for Associate of Applied Science and Associate of Applied Arts degree students from within state who transferred to a large public research university between 2000 and 2009. The study compares students with 16 transcripted technical credits at transfer with a peer group of college-parallel associate degree students and a group with a combination of career technical plus college-parallel credits. Each group's academic performance was measured and a demographic profile was developed. The three groups were compared on different factors, and the impact of external and internal influences on the transfer process was examined. The number of technical credits was found to extend the time for degree attainment as did lower GPA in the first semester. The study identifies a number of data limitations to the study as well as additional factors that could potentially produce useful results. The paper has an extensive literature review and a review of transfer policies from several different states.

Townsend, Barbara K. and Terry Barnes. (July 30-31, 2001) Tying Transfer to Type of Associate Degree: A Tangled Knot. Paper presented at the Annual Meeting of Johnson County Community College and Oakton Community College, Overland Park, KS.

This study examines the relationship between the type of associate degree and academic performance at the four-year institution students with associate degrees transferred to. The cohort included all students graduating with an associate degree (6,171) in the 1995/96 academic year who transferred to a Missouri public four-year institution (1,585) within one academic year and graduated (984) by the end of summer 2000. Seventeen percent of the students transferring had an Associate of Science (AS) or Associate of Applied Science (AAS) degree. Of the students who transferred with an AA degree, 63% received a baccalaureate compared to 46% of those who transferred with an AS or AAS degree. There was no statistically significant difference in GPA upon graduation. The students who transferred with an AS or AAS received a baccalaureate in the same program as their associate degree.

4.3.3 Labour Market and Economic Outcomes in the USA

Auerbach, David I., Peter I. Buerhaus, and Douglas O. Staiger. Do Associate Degree Graduates Registered Nurses Fare Differently in the Nurse Labor Market Compared to Baccalaureate-Prepared RNs? NURSING ECONOMICS, 2015; 33 (1): 8 - 12.

Between 2005 and 2008, 57% of nurses completing their initial RN education in the USA were prepared via an associate degree (ADN). Changes by credentialing groups may be making nurses prepared via BSN more marketable than the ADN graduates. Since 2008, the unemployment rate for ADNs has been higher than that of BSNs and the gap is growing. ADNs are less likely to work in hospitals than their BSN counterparts.

Backes, Benjamin, Harry J. Holzer and Erin Dunlop Velez. (August 2014) Is It Worth It? Postsecondary Education and Labor Market Outcomes for the Disadvantaged. Postsecondary Education and Labor Market Program, Centre for the Analysis of Longitudinal Data in Education Research (CALDER) at the American Institute of Research. www.irp.wisc.edu.

This paper uses data from the state of Florida which links postsecondary students' records to Unemployment Insurance earnings data and secondary school records. It finds that significant labour market premium were earned with a variety of more technical certificate and associate of arts programs, even for those with weak academic performance, than is the case with general humanities programs.

Bailey, Thomas, Gregory Kienzi, and Dave E. Marcotte. (2004). The Return to a Sub-Baccalaureate Education: The Effects of Schooling, Credentials and Program of Study on Economic Outcomes. Prepared for the National Assessment of Vocational Education, U.S. Department of Education.

While the data are old (cohorts who finished high school in the early 1980s and 1990s), and economic conditions in 1990 - 2000 may have provided different results than would now be the case, this study uses an assortment of rich data sources and a comprehensive methodology. The study found that the economic returns for students with an occupational associate degree were greater than for those with an academic associate degree, that there were gender differences with different degrees, and that having the degree (the sheepskin effect) was more valuable

than having completed two FTE years of sub-baccalaureate education. The returns were not the same for non-traditional populations.

Belfield, Clive, Yuen Ting Liu, and Madeline Joy Trimble. (March 2014) [The Medium-Term Labor Market Returns to Community College Awards: Evidence from North Carolina](#). A CAPSEE Working Paper. www.capseecenter.org

[The labour market gains for first-time college students who enrolled in the North Carolina Community College system in 2002-03 were investigated using student-level administrative data from college transcripts, Unemployment Insurance wage data, and enrollment and graduation data from the National Student Clearinghouse across 830,000 students. The returns to associate and bachelor's degrees were strong, particularly for female students; even small accumulations of college credits had labour market value; and returns to health sector credentials were extremely high. Earnings gains vary significantly across different subjects of study, and are generally higher for quantitative or technical-vocational courses.](#)

Carnevale, Anthony P.; Tamara Jayasundara, & Ban Cheah, Center on Education and the Workforce, Georgetown University. (2012) [The College Advantage: Weathering the Economic Storm](#)

This study compares the number of jobs lost during the great depression of 2008, unemployment rates, and the number of jobs regained in the recovery of three groups: those with high school diplomas or less; those with associate degrees or some college; and those with bachelor's degrees or better. On all measures, the associate degree group fared markedly better than the high school group, but less well than the baccalaureate group. The study also looks at the shifts in enrolment patterns in postsecondary education following the depression. The most noticeable shift is that more men are going to college than before and are often enrolling in traditionally female programs like nursing.

Carnevale, Anthony P., Stephen J. Rose, & Ban Cheah. (2011) [The College Payoff: Education, Occupations, Lifetime earnings](#). Center on Education and the Workforce. Washington, D.C.

This study looks at lifetime earnings by educational level and finds that on average associate degree holders earn more than people with some college and less than persons with a bachelor's degree. The study notes that race/ethnicity and gender can overrule degree levels, and that earnings in some occupations are considerably higher than in others.

Carruthers, Celeste K. and Thomas Sanford. (March 2015) [Way Station or Launching Pad? Unpacking the Returns to Postsecondary Adult Education](#). Working Paper #2015-02, Department of Economics, Haslam College of Business, University of Tennessee, Knoxville, TN.

Using linked postsecondary institution and in-state earnings and industry data for 44,000 unique students at Tennessee Colleges of Applied Technology and community colleges between 2004 and 2008, this paper examines the returns to diplomas, certificates and associate degrees awarded to adult students. This paper focuses much attention on the adult student, and explores the impact of the credentials to students who change industries. It finds that the returns to associate degrees, which may or may not be occupational in nature, and diplomas are greater than for certificates. It finds wage gains are realized by students who leave without a credential compared to non-students with similar employment histories.

Dadgar, Mina and Madeline Joy Trimble. (2014) [Labor Market Returns to Sub-Baccalaureate Credentials: How Much Does a Community College Degree or Certificate Pay?](#) Education Evaluation and Policy Analysis, Month 201X, Vol. XX, No. X, p. 1 – 20.

Using matched longitudinal college transcripts and Unemployment Insurance records for students who entered a Washington State community college in 2001-2002, the researchers calculate the returns to different types of community college credentials. The study found that returns were highest for associate degrees in almost any field of study when compared to short-term and long-term certificates across different fields of study.

Gelblum, Madeleine, Harvard Kennedy School. (2014) The Early Impact of postsecondary Career and Technical Education: Do Workers Earn More in Occupations Related to their College Major? A CAPSEE Working Paper; www.capseecenter.org

This study explores the relationship between college major, occupation, and early-career annual earnings for the years 2008 to 2010 using data from the National Longitudinal Survey of Youth of 1997. Results suggest that the early returns to postsecondary credentials vary widely by college major and level of attainment, with large economic benefits accruing to credentials in business, health science, and STEM subjects and much smaller benefits accruing to credentials in education and the humanities. The study also finds that matched employment in the fields of health science, STEM, and education provides a substantial premium to bachelor's degree holders, while matched employment in health science provides a substantial premium to those with an associate degree.

Holzer, Harry J., Georgetown University and American Institutes for Research (AIR) and Erin Dunlop, AIR. (April 2013) Just the Facts, Ma'am: Postsecondary Education and Labor Market Outcomes in the U.S.: (Institute for Research on Poverty Discussion Paper 1411-13): <http://www.irp.wisc.edu>.)

Researchers used two different data sets: the Survey of Income and Program Participation (SIPP) and the National Educational Longitudinal Survey (NELS), to examine rates of degree attainment with a particular emphasis on disadvantaged populations. The two data sets revealed slightly different results. They found a greater increase in the attainment of certificates and associate degrees than BAs since 2000. They found that Blacks and Hispanics have made more relative progress in the attainment of sub-baccalaureate credentials than in BAs or above. Differences in educational attainment were also correlated to gender and socio-economic status.

Jepsen, Christopher, Kenneth Troske and Paul Coomes. (2014) The Labor-Market Returns to Community College Degrees, Diplomas, and Certificates. The Journal of Labor Economics, 32(1), 95 – 121.

This paper provides detailed empirical evidence of the labor-market returns to community college diplomas and certificates as well as information on the returns to associate degrees and credits earned. It draws on detailed administrative data from Kentucky for students who entered the community college system during 2002/03 and 2003/04 school years. It finds that associate degrees and diplomas have large labor-market returns, particularly for women. Certificates have lower returns. There is substantial heterogeneity in returns across fields of study.

Zeidenberg, Matthew, Mark Scott, and Clive Belfield. (February 2015) What about the Non-completers? The Labor Market Returns to Progress in Community College, Centre for Analysis of Postsecondary Education and Employment (CAPSEE).

Using a revealed preference method of determining student programs of study rather than the more usual stated preference method, the study calculates the labour market returns to programs of study, accounting both for those who obtain an award and those who do not. The dataset is composed of all first-time-in-college, credit-seeking students in the North Carolina Community College System (NCCCS) in the academic years 2002/03 through 2004/05. The NCCCS includes 58 colleges and enrolls approximately 100,000 new curriculum (award-seeking) students

each year. The transcript dataset contains information on individual students, including full college transcripts (e.g., courses taken, grades earned, awards received, duration of study), basic personal information (e.g., age, gender, race/ethnicity), and financial aid received (loans and grants per semester). The college transcript data is merged with student-level data from the National Student Clearinghouse (NSC) which includes information on awards subsequent to enrollment within the NCCCS. Using Social Security numbers, this combined student dataset is merged with earnings data obtained from the North Carolina Department of Commerce Unemployment Insurance (UI) records.

The results show that returns vary not only by program completion but also by program non-completion. Consequently, combining data on completers and non-completers yields a new pattern of returns. For some awards, this leads to wider earnings differentials. The variance in returns by subject of study is reduced when data on completers and non-completers is combined. Progression in a program per se does not lead to higher earnings for students who do not complete (even as it demonstrably does for students who complete their program). If validated, these findings have significant implications for policies on program choice and on student retention policies.

This study shows considerable value return for associate degree holders compared to certificate and diploma holders; it is most pronounced for nursing and other health programs.

4.3.4 Other Associate Degree Topics in the USA

Batts, David L. and Leslie R. Pagliari. Transforming the Terminal Associates of Applied Science into a Four-Year Degree: A Win-Win Situation for Students, Community Colleges, Universities, and Businesses. (2013) Community College Journal of Research and Practice, 37: 365 – 373.

This descriptive study discusses the transformation of the formerly terminal Associate of Applied Science (AAS) degree into a technical four-year baccalaureate degree. It notes a general lack of coordination and communication on how the AAS degree leads to completion of a baccalaureate (BS) degree. Survey results of students currently in a degree completion program include motives for their progression to a four-year degree.

Kujawa, Tricia A. The AAS to BAS Pathway: Heating Up the Educational Aspiration of CTE Students. (March, 2013) Community College Journal of Research and Practice, 37.5, 356 – 364.

The lived experiences of eight students who entered a bachelor of applied science (BAS) through an associate of applied science (AAS) are described. The students moved through stages of disillusionment related to education, the profession, and self on the way to raising their educational aspirations.

Newell, Mallory Angeli. What's a Degree Got to Do with It? The Civic Engagement of Associate's and Bachelor's Degree Holders. Journal of Higher Education Outreach and Engagement, Volume 18, Number 2 (2014), p. 67

This study of a nationally representative, weighted sample of the US population compared the civic engagement of high school, associate degree and baccalaureate degree graduates. The data were drawn from the Current Population Survey (2008), the Volunteer Supplement Survey (September 2008) and the Civic Engagement Survey (November 2008) While the measures of civic engagement and factors linked to civic engagement were limited in the data set. Analyses showed that associate degree holders were significantly less likely than bachelor's degree holders to be civically engaged, but more likely to be engaged than high school graduates.

Wellman, Jane V. (2002). State policy and community college-baccalaureate transfer. The National Center for Public Policy and Higher Education and the Institute for Higher Education Policy, National Center (Report #02-6). <http://www.highereducation.org/reports/transfer/transfer.pdf>

The researcher examined the transfer policies in place in different states (based on Measuring Up 2000 data) and concludes that high-performing states have stronger statewide higher education governance capacities. She also identified an absence of accountability on the part of four-year institutions for transfer with the onus for transfer resting with the two-year institutions.

4.4 Associate Degrees in Australia

Beddie, Francesca. (2014). A differentiated model for tertiary education: past ideas, contemporary policy and future possibilities. Adelaide: National Centre for Vocational Education Research. <https://www.ncver.edu.au/>

An overview of the evolution of the Australian higher education system from a binary to a more unified system. Of particular interest is the section looking at the opportunities and challenges facing the Technical and Further Education (TAFE) Colleges' attempts to offer advanced qualifications, including associate degrees.

Callan, Victor & Kaye Bowman. (2013). Issues for VET providers delivering associate and bachelor degrees: literature review. Adelaide: National Centre for Vocational Education Research. <http://www.ncver.edu.au/publications/2690.html>.

The researchers investigate public and private vocational education and training (VET) providers that deliver associate and bachelor degrees in an effort to understand the operational issues they face in ensuring the successful delivery of these higher education qualifications. Many single sector (VET and higher education) providers remain, but there is a growing number of tertiary education providers accredited to offer both vocational and higher education. While TAFE institutions in several Australian states are able to offer higher education qualifications, the number doing so was still small (.12% of total vocational education enrolments) in 2010. A number of the issues identified will be recognizable to BC postsecondary educators as variations of them were addressed as colleges began to offer baccalaureate degrees and were pressured to expand transfer opportunities from career-technical programs to baccalaureate programs.

Callan, Victor & Kaye Bowman. (2015). Lessons from VET providers delivering degrees. Adelaide: National Centre for Vocational Education Research. <http://www.ncver.edu.au/>

This is a companion document to the previous one. It uses six in-depth case studies to provide a better understanding of the major drivers and key challenges facing these VET providers as they transition to offering higher education qualifications.

APPENDIX A: Number of Associate Degrees Awarded in BC by Institution 2004/05 to 2013/14⁴⁶

	2004/ 05	2005/ 06	2006/ 07	2007/ 08	2008/ 09	2009/ 10	2010/ 11	2011/ 12	2012/ 13	2013/ 14	Institutional TOTAL
CAM	180	159	168	129	119	153	175	204	134	123	1,544
CAPU	196	148	84	67	77	95	106	120	119	133	1,145
CNC	16	6	3	13	4	8	7	9	10	16	92
COTR	16	16	14	11	5	5	8	4	6	5	90
DOUG	312	311	286	211	218	192	241	270	276	289	2,606
IIG	10	11									21
KPU	272	212	214	157	184	170	150	135	130	179	1,803
LANG	280	173	189	124	125	130	161	182	196	148	1,708
NIC	12	14	9	16	13	17	18	11	2	2	114
NLC	7	2		2	1	5	2	1	2	2	24
NVIT				3	1	6	9	10	20	9	58
NWCC	33	30	27	23	22	26	17	17	13	18	226
OKAN	25	4	21	58	53	77	84	69	109	76	576
SEL	13	19	17	8	18	21	13	18	8	13	148
TRU	50	59	34	40	52	53	21	15	12	12	348
UFV	83	60	57	47	38	39	45	44	25	16	454
VIU	6	10	5	7	5	7	4			3	47
TOTAL	1,511	1,234	1,128	916	935	1,004	1,061	1,109	1,062	1,044	11,004

⁴⁶ Data drawn from STP database September 2015

APPENDIX B: Associate Degrees Awarded in BC 2013/14 by Two-digit CIP
Code and PSI CRED_PROG_DESC⁴⁷

CIP (2 Digit)	CIP DESCRIPTION	PSI CRED_PROG_DESC	# Awarded 2013/14	% of Total 2013/14
3	Natural Resources and Conservation	Associate of Science: Environmental Studies	3	0.3%
5	Area, Ethnic, Cultural, and Gender Studies	Associate of Arts: Aboriginal Studies Associate of Arts: Asian Studies First Nations Studies Associate Degree General Arts Associate Degree	4 1 1 5	0.4% 0.1% 0.1% 0.5%
11	Computer and Information Sciences and Support Services	Associate of Arts: Computer Science Associate of Arts: Computer Science Coop Ed	3 1	0.3% 0.1%
23	English Language & Literature/Letters	Associate of Arts: Creative Writing Associate of Arts: English	12 16	1.1% 1.5%
24	Liberal Arts & Sciences, General Studies & Humanities	AA-Culture & Technology Arts - Associate Degree Arts/CRWR - Associate Degree Arts/ENVS - Associate Degree Arts/Forensic - Assoc. Degree Arts/INTS - Associate Degree Arts/WSGR - Associate Degree Assoc of Arts - General Assoc of Arts - General Degree Associate of Arts Associate of Arts Degree Associate of Arts Degree Year II Associate of Arts: Science (General) Associate of Arts: Arts (General) Associate of Arts: Social Sciences (General) Associate of Science Associate of Science) - General Degree Associate of Science Degree Associate of Science Degree - General Associate of Science Degree Year II Associate of Science: Science (General) Science - Associate Degree Science/Env - Associate Degree University Arts and Sciences	2 231 4 3 2 2 2 18 1 215 16 12 1 40 5 61 1 3 2 1 18 42 3 1	0.2% 22.1% 0.4% 0.3% 0.2% 0.2% 0.2% 1.7% 0.1% 20.6% 1.5% 1.1% 0.1% 3.8% 0.5% 5.8% 0.1% 0.3% 0.2% 0.1% 1.7% 4.0% 0.3% 0.1%

⁴⁷ Data drawn from STP database September 2015

		University Arts and Sciences - Associate of Arts	1	0.1%
		University Credit	18	1.7%
		University Transfer	16	1.5%
26	Biological and Biomedical Sciences	Assoc of Science - Biology	14	1.3%
		Associate of Science: Bioinformatics	3	0.3%
		Associate of Science: Ecology	1	0.1%
		Associate of Science: Molecular/Microbiology	3	0.3%
27	Mathematics & Statistics	Assoc of Science - Mathematics	3	0.3%
30	Multidisciplinary/Interdisciplinary Studies	AA - Global Stewardship	22	2.1%
		Assoc of Science - General	12	1.1%
		Associate of Arts: Classical Studies	2	0.2%
		Associate of Arts: Peace and Conflict Studies	7	0.7%
38	Philosophy & Religious Studies	Associate of Arts: Philosophy	2	0.2%
40	Physical Sciences	Assoc of Science - Chemistry	2	0.2%
42	Psychology	Associate of Arts - Psychology	96	9.2%
45	Social Sciences	Assoc of Arts - Anthropology	2	0.2%
		Assoc of Arts - Criminology	63	6.0%
		Assoc of Arts - Economics	3	0.3%
		Associate of Arts: Geography	5	0.5%
		Assoc of Arts - Political Science	4	0.4%
		Assoc of Arts - Sociology	8	0.8%
		Assoc of Science - Geography	1	0.1%
		Criminology Associate Degree	3	0.3%
50	Visual & Performing Arts	AA - Art History	3	0.3%
51	Health Services & Related Clinical Sciences	Associate of Arts: Health Sciences	6	0.6%
		Associate of Science: Dietetics	1	0.1%
52	Business, Management, Marketing, and Related Support Services	Associate of Arts: Commerce & Business Studies	5	0.5%
54	History	Associate of Arts: History	6	0.6%
		Total Awarded	1,044	100%

APPENDIX C: Potentially Useful Federal Government Datasets

The Government of Canada collects statistical information on postsecondary education primarily through the **Post-Secondary Student Information System (PSIS)**. PSIS is a national survey that enables Statistics Canada to provide detailed information on enrolments and graduates of Canadian public postsecondary institutions in order to meet policy and planning needs in the field of postsecondary education. Postsecondary institutions across the country submit their data to PSIS each year. Unfortunately, data on associate degrees are collected and reported only as part of a category called “two-year college programs” making PSIS not a useful source of data about this credential.

The **National Graduate Survey (NGS)**, conducted by Statistics Canada, examines the labour market experiences of graduates from Canadian public universities, CEGEPs, community colleges and trade/vocational programs. The survey's primary objective is to obtain information on the labour market experiences of graduates entering the labour market, focusing on employment, occupations and the relationship between jobs and education. The NGS interviews a relatively small sample of graduates two and five years after graduation. To date, seven graduating classes have been surveyed: 1982, 1986, 1990, 1995, 2000, 2005 and 2013.

While the survey questions ask about field of study, program and ensuing credential, the response options for the latter do not include associate degree and credential data are bundled into “college,” “bachelor,” “master,” and “doctorate”. The NGS is not a useful source of information about associate degrees.

The **Labour Force Survey (LFS)** is a monthly survey that uses personal and telephone interview, as well as electronic questionnaires, to measure the current state of the Canadian labour market. It is used, among other things, to calculate the national, provincial, territorial and regional employment and unemployment rates. While education level data are collected, they are in gross categories and do not distinguish associate degrees.

The **Youth in Transition Survey (YITS)** is a Canadian longitudinal survey designed to examine the patterns of, and influences on, major transitions in young people’s lives, particularly with respect to education, training and work. It began in 2000 when the participants were 18 – 20 years of age; the last data collection was 2008. This survey appeared to hold the most promise of useful data for research into the outcomes of students with associate degrees. However, the survey questions about educational achievement provide a list of response options that do not allow a respondent to indicate that s/he has an associate degree distinct from a two-year diploma. It might be possible to derive information about associate degree holders, but the relatively small sample size is unlikely to produce usable data.⁴⁸

The **National Occupational Classification (NOC) 2011** is the authoritative resource on occupational information in Canada. Education and training are part of the employment requirements provided for each occupation throughout Canada's labour market; however, the one category that would include associate degrees is “two to three years of postsecondary education at a college (includes community college, CEGEP, technical institute, trade school and agricultural college).” The associate degree is not

⁴⁸ YITS sample began with 23,000 youth in the first survey cycle, January-February 2000.

mentioned as a pre-requisite for employment in particular occupations making the NOC of no value for assessing the occupations for which the associate degree is a pre-requisite.

APPENDIX D: Distribution of Associate Degrees Awarded in the USA 2012/13 by Field of Study⁴⁹

CIP Code	Field of Study	Associate Degrees	Associate Degree % of Total by CIP	Bachelor's Degrees	Masters Degrees	Doctoral Degrees
1	Agriculture and natural resources	6,827	0.7%	33,593	6,339	1,411
4	Architecture and related services	468	0.0%	9,757	8,095	247
5	Area, ethnic, cultural, gender, and group studies	271	0.0%	8,851	1,897	291
9	Communication, journalism, and related programs	4,299	0.4%	84,817	8,757	612
10	Communications technologies	5,026	0.5%	4,989	577	0
11	Computer and information sciences	38,931	3.9%	50,962	22,777	1,826
13	Education	18,719	1.9%	104,647	164,624	10,572
14	Engineering	3,735	0.4%	85,980	40,417	9,356
15	Engineering technologies and engineering-related fields	33,766	3.4%	16,493	4,902	111
16	Foreign languages, literatures, and linguistics	2,130	0.2%	21,673	3,708	1,304
19	Family and consumer sciences/human sciences	8,994	0.9%	23,934	3,253	351
22	Legal professions and studies	11,826	1.2%	4,425	7,013	47,246
23	English language and literature/letters	2,085	0.2%	52,424	9,755	1,373
24	Liberal arts and sciences, general studies, and humanities	344,091	34.2%	46,761	3,268	98
25	Library science	181	0.0%	102	6,983	50
26	Biological and biomedical sciences	4,185	0.4%	100,319	13,335	7,943
27	Mathematics and statistics	1,802	0.2%	20,453	6,957	1,823
29	Military technologies and applied sciences	1,002	0.1%	105	32	0
30	Multi/interdisciplinary studies	27,404	2.7%	47,654	7,956	730
31	Parks, recreation, leisure, and fitness studies	3,453	0.3%	42,714	7,139	295
38	Philosophy and religious studies	326	0.0%	12,793	1,931	796
39	Theology and religious vocations	881	0.1%	9,385	14,276	2,175
40	Physical sciences and science technologies	6,376	0.6%	28,050	7,011	5,514
42	Psychology	6,119	0.6%	114,450	27,846	6,323
43	Homeland security, law enforcement, and firefighting	48,425	4.8%	60,269	8,868	147
44	Public administration and social services	8,781	0.9%	31,950	43,590	979
45	Social sciences	14,750	1.5%	143,587	17,483	3,616
46	Construction trades	5,038	0.5%	244	6	0
47	Mechanic and repair technologies/technicians	20,444	2.0%	267	0	0

⁴⁹ Degrees Conferred by Public and Private Institutions, Digest of Education Statistics 2014, Table 318.50. Degrees conferred by postsecondary institutions, by control of institution, level of degree, and field of study: 2012-13. U.S. Department of Education, National Centre for Education Statistics, Integrated Postsecondary Education Data System (IPEDS)

48	Precision production	3,344	0.3%	36	9	0
49	Transportation and materials moving	2,087	0.2%	4,526	1,420	1
50	Visual and performing arts	22,306	2.2%	97,796	17,869	1,814
51	Health professions and related programs	214,004	21.3%	181,144	90,931	64,195
52	Business	133,966	13.3%	360,823	188,625	2,836
54	History	919	0.1%	34,191	4,102	1,003
	All fields, total	1,006,961	100.0%	1,840,164	751,751	175,038