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THE EXPENSE TIED TO SECONDARY COURSE FAILURE: THE CASE OF ONTARIO

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This article describes a study that examined the volume of secondary course failure and its direct budget impact on Ontario's K–12 public education system. The study employed a straightforward, descriptive accounting method to estimate the annual expenditure tied to secondary course failure, taking into account some factors known to be systemically related (e.g., grade level, subject area, additional services received). Other studies have used secondary dropouts as the measure of failure and estimated the private or public costs; this study focused on the direct budget impact of secondary course failures on districts and the school system. In the 2008–2009 year, there were approximately 5,082,543 secondary course attempts across 70 school boards in Ontario: 4,682,535 were completed successfully (passed) and 400,008 were unsuccessfully completed (failed). I estimated the total level of expenditure tied to failure for Ontario's public education system to be $472,729,698, or 7.7% of total instructional and operational spending. My findings point to practical applications that could help district and system leaders in their work to drive positive educational outcomes. I also provide a methodological framework for thinking about levels of expenditure tied to secondary course failure at the system and school board levels. Currently no such framework exists in the public realm.

When the standard model of formal schooling emerged in the late 19th and early 20th century there was little (if any) empirical research on how children learned, and so was structured by analogy with the industrial-age factory and designed to reflect the best "common sense" assumptions of the times (Callahan, 1962; Organisation for Economic Cooperation and Development [OECD], 2008). One of these assumptions was that schools could produce good and bad students, much like a factory could produce good and bad widgets, and a key function of the model was to sort students by academic talent to ensure appropriate placement in work and

society. At the secondary level, the model required (and still requires) that students complete their courses with a final mark of at least 50%. If a student does not achieve at this level, then it is assumed that they did not meet the outcomes and they fail to earn their course credit. Incorporating this and other forms of *academic failure* as potential outcomes of the model was intentional for quality control (Faubert, 2012; OECD, 1998, 2008).

After the 1950s, researchers began asking hard questions about whether this model—with its assumptions and prescriptions for addressing weak student performance—was actually working, and at what costs. Researchers in the social sciences began investigating the social (nonfiscal) costs of academic failure and have since addressed important questions about who is failing and why, the academic and socioemotional impact of academic failure on students, and so on (Community Health Systems Resource Group, 2005; OECD, 1998, 2007, 2012).

Scholars and policymakers also became increasingly concerned with academic failure from an administrative and planning perspective, specifically the burden of *resources* (e.g., funds, personnel, time, etc.) on education systems (OECD, 1998, 2007, 2012; Levin & Belfield, 2007; Levin, 2008b). The volume of research conducted in recent decades examining academic failure and its related fiscal costs is impressive (Canadian Council on Learning, 2009; Dobson & Sharma, 1999; Eide & Goldhaber, 2005; Levin, 2008a; Levin & Belfield, 2007; Martinez & Vandergrift, 1991; OECD, 2007, 2012; Pacific Research Institute, 2008; Psacharopoulos, 2007). Scholars and policymakers now understand that simply investing more in education, which often means more money, will not address long-standing issues, like academic failure, and other challenges associated with how education systems are modelled and resources managed (Haelermans, De Witte, & Blank, 2012; Hatsor, 2014; Cobb-Clark & Jha, 2016; OECD, 2012; Young, Levin, & Wallin, 2014).

The context described above underscores the enduring relevance of understanding the resources tied to academic failure for scholars, policymakers, and leaders working in education. Much of the research to date has taken a long-term focus, estimating the costs at the individual or the state level. A smaller group of studies have attempted to estimate the direct cost of failure to governments in the short term (Levin, 2008a; Dobson & Sharma, 1999; Eide & Goldhaber, 2005). There exists, however, a knowledge gap in the scholarly literature on education administration concerned with the level of resources tied to secondary course failure. To date, the volume, distribution, and direct public expenditure tied to secondary students failing courses remains unknown (at least in the public realm). For large systems, like Ontario's K–12 public education system, to operate successfully, scholars argue that inputs, outputs, and outcomes need to be rationally accounted for and managed (Levin, 2008a; Smith & Sutherland, 2011; OECD, 2012). The limited amount of resources available to invest in public education coupled with tightening public budgets all over Canada only serves to reinforce the imperative for education leaders to consider how they are making use of their limited resources (Young et al., 2014). If provincial, district, and school leaders had a better understanding of the level of resources tied to secondary course failure, then it might help them make the best use of available resources in their effort to improve student outcomes (Levin, 2008a; Levin & Naylor, 2007; Ontario Ministry of Education, 2014a; OECD, 2012).

To help address this knowledge gap, I conducted a study to examine the volume and distribution of secondary course failure and its direct budget impact on Ontario's K–12 public education system, and this article reports on the findings. To this end, I used course pass/fail rates for all secondary schools in 70 Ontario public school board districts acquired from the Ontario Ministry of Education. In addition, a *descriptive accounting method* was used to estimate

the annual expenditure tied to secondary course failure, taking into account some factors known to be systemically related (e.g., grade level, subject area, additional services received). While other studies have used secondary dropouts as the measure of failure and estimated the private or public costs (Canadian Council on Learning, 2009), my study focused on the direct budget impact of secondary course failures on districts and the school system.

This paper makes three important contributions to the literature and field of educational administration. First, from a methodological point of view, the paper provides a framework for thinking about levels of expenditure tied to secondary course failure at the system and school board levels. Currently no such framework exists. Second, from an empirical point of view, the findings presented in this paper relied on a robust data set that, when made public, can help shape policy and public debate on what role academic failure should play in schools, how much money should be invested in students, and how that money should be used (Levin, 2008a). Third, the results point to a few practical applications that could help system and district leaders drive positive educational outcomes and pursue efficient operational practices.

This article is structured as follows: First, I outline key definitions and briefly review two studies that influenced the design of my project. Next, I provide contextual information regarding Ontario's public education system. Finally, I outline the conceptual framework of the study, followed by the methodology, findings, discussion, and applications for educational research and policy.

Key Definitions

The term *academic failure* is contested and has no single meaning.[1] The type of academic failure considered here is secondary course failure: when a student fails to earn the credit for their enrolled secondary course. For the purposes of this article, the terms *expense* and *expenditure* will refer to the money spent or disbursed by school boards for the provision of education. *Resources* will refer to time, money, people, materials, equipment, physical facilities, knowledge, and skill (Ontario Ministry of Education, 2014a).

Review of Influential Studies

In this section I will briefly review two key sources that informed the design of this study. Dobson and Sharma (1999) sought to develop a methodological approach for analyzing the cost of academic failure for Australian undergraduate students. The authors accounted for two components of cost: the public (government funded) and the private (student fees). The authors calculated the public cost drawing from published figures and the government's own formula used to determine how much each university receives. The authors recognized that not all of the funding provided by the government to universities was dedicated exclusively to teaching, and so discounted the total funding by expenditure for nonteaching activities, including research. Even though the study was conducted at the postsecondary level, the authors provided insight into the importance of discounting total funding for activities unrelated (or distantly related) to teaching when estimating the cost of academic failure (Dobson & Sharma, 1999).

Eide and Goldhaber (2005) considered the costs to the taxpayer of educating a student for an additional year and the cost to the individual student. Even though the authors estimated the

[1] OECD defines academic failure at the individual level as ". . . the failure of a student to obtain a minimum level of knowledge and skills, which can at the extreme lead to dropping out of school" (2012, p. 20).

cost of educating a student for an additional year and not course failure, their methodology raised a number of important points: whether to generate an estimate using the *average cost approach* versus *marginal cost approach*, and the importance of accounting for both local costs of education and varying services that students receive. These points informed my project and are discussed further in the methodology section.

Context: Ontario

The Grants for Students Needs (GSN) is the formula used by the province to provide operational funding to Ontario's 72 public school boards (Ontario Ministry of Education, 2015a). Education Programs—Other (EPO) is a second allocation mechanism used to support key Ontario Ministry of Education priorities and to pilot new policies and programs (Ontario Ministry of Education, 2015b). School boards can also receive additional funding from other ministries for special programs related to their mandates, and raise some additional funds on their own, including renting out excess space (Ontario Ministry of Education, 2015a). Overall, the vast majority of funding provided to boards is through the GSN, accounting for more than 90% of total educational funding (Ontario Ministry of Education, 2015a, p. 3). All funding sources are intended to help the system reach key goals, which are outlined in *Achieving Excellence*, Ontario's "renewed vision for education" (Ontario Ministry of Education, 2014b, 2015a, 2015b). Consistent with the previously discussed research on resource allocation in education, ministry officials in Ontario expect district leaders to use their funding efficiently (Ontario Ministry of Education, 2014a, 2014c) and pursue operational practices that can support efficient and cost-effective resourcing in their effort to improve student outcomes (Leithwood, 2013; Levin & Naylor, 2007).

The analysis in this article is based on GSN-related funding only. The GSN funding formula is a collection of grants, the details of which are published each year in a report entitled *The Technical Paper*. Education funding to school boards in 2008–2009 consisted of a Pupil Foundation Grant, a School Foundation Grant, a Pupil Accommodation Grant, and 14 special purpose grants based on the needs of students, schools, and school boards (e.g., geographic, declining enrolment adjustment, student transportation grant, etc.) (Ontario Ministry of Education, 2008). Foundation grants provide funding based on numbers of students and schools, while special purpose grants "provide additional funding to meet specific needs, and generally use data reflective of local conditions and students" (Ontario Ministry of Education, 2015a, p. 20).

With regard to who is failing in Ontario secondary schools, Kearns's (2011) study on the impact of high-stakes, large-scale standardized literacy testing at the secondary level in Ontario (i.e., Ontario Secondary School Literacy Test) provides some insight. In her study, she found the factors of "class, race, ethnicity, school placement (i.e., academic, applied, ESL), poverty by postal code and literacy test success and failure feature prominently in examining who is failing the EQAO's OSSLT" (Kearns, 2011, p. 126). This finding is consistent with a large body of research that shows academic failure disproportionately impacts already vulnerable student groups: racial minorities, boys, immigrants, Indigenous youth, students with special education needs, students from low-income families, and students whose first language is different from the language of instruction (Bowman, 2005; Community Health Systems Resource Group, 2005; Eurydice, 2011; Janosz, Bisset, Pagani, & Levin, 2011; OECD, 1998, 2007, 2012).

Consistent with the standard model, a student attending an Ontario public secondary school who achieves a grade of less than 50% in a particular course fails to earn their credit.

Exactly how much course failure occurs on an annual basis in Ontario's secondary schools is a difficult question to answer without access to the data. Currently, the ministry does not make public the volume of secondary course failure, nor estimates of the level of expenditure tied to the outcome.

Conceptual Framework

The approach I used to estimate the level of expenditure methodologically resembles a *descriptive accounting analysis*, but borrows conceptually from a *cost analysis approach*. There are important differences between cost analyses and expenditure analysis. The difference in how cost is understood when conducting standard cost analyses and how it is understood in this study is critically important. Generally, cost refers to the value of all the resources that a given program could use, were they all assigned to the program (Levin & McEwan, 2001). In other words, costs are those resources that could potentially be put to other uses, such as opportunity costs—defined as "the use of resource for one purpose [that] prevents their use for another, potentially more profitable purpose" (White et al., 2005, p. 10). Cost analyses based on this definition, then, would include all of the cost information pertaining to a program: for example, a valuation of volunteer time and donated equipment. It will also capture the distribution of costs over time. In the present study, cost was employed in a manner more in line with expenditure—the money spent or disbursed by the school system for the provision of education.

As previously outlined, the present study does not constitute a conventional cost analysis. It borrows conceptually from the *basic cost analysis* method (White et al., 2005), as well as Levin and McEwan's *resource-cost modeling approach* (RCM) to organize the expenditure analysis (Levin & McEwan, 2001; White et al., 2005). A basic form cost analysis is used to

determine how much a program or intervention will cost and how the costs are distributed. Levin and McEwan's RCM accounts for different services that students receive in the school setting (White et al., 2005). These approaches are relevant here because they helped to conceptualize a method that can describe the distribution of failure and its related expenditure, with specific attention to services provided to Ontario's secondary school students that can be directly tied to funding and course failure.

In deciding which factors to use in describing the distribution of failure, I looked to the influential studies and also considered which factors are supported by OnSiS[2] data. Firstly, academic failure is related to school placement (Kearns, 2011). In Ontario, secondary courses are labelled one of seven course levels: Academic, Applied, Open, University, University/College, College, and Workplace (Ontario Ministry of Education, 2000). The different course levels effectively create "destination-related stream[s] in Ontario's public secondary education system (Ontario Ministry of Education, 2000).[3] Through OnSiS, the ministry collects data related to course level, which is included as a factor. Secondly, and as mentioned previously, academic failure in Ontario is systemically related to key demographic characteristics (Kearns, 2011). Special education and language status are two factors tied to academic failure and supported by OnSiS. They are also tied to revenues that districts receive to provide educational programming, and so were included in my analysis. I also included district type and subject area (e.g., math,

[2] Brought online in 2004, OnSiS is used by school boards to submit achievement and demographic data to the ministry via a web-based system. Data are collected three times in a school period (October, March, and June) and covers a range of domains including course titles, number of classes, number of students and educators, student attendance, etc. Approximately 90 million data elements are collected each year.

[3] Transfer courses are offered to students wanting to bridge streams. For example, a student enrolled in Grade 10 Applied English cannot automatically enroll in the Grade 11 University English course because the prerequisite entry course is Grade 10 Academic English. A bridging partial-credit course is available for those students who "wish to change from one course type to the other in the same subject between Grade 10 and Grade 11 or between Grade 11 and Grade 12. A transfer course can be taken as a summer course, as an independent study, or as a partial-credit course within school hours (Ontario Ministry of Education, 2000, p. 6).

English, etc.) as additional factors. In Ontario there are four district types: English public, French public, English Catholic, and French Catholic. Including district type and subject area makes it possible to comment on how fail rates and expenditure are distributed along these lines.

In deciding which expense categories to include in the analysis, the existing academic literature pointed to a few general categories (i.e., costs of infrastructure, libraries, information technology, and administration), but I needed expenditure categories that were more specific to the secondary level and relevant to the Ontario context. For this, I looked to the annual Schedule 10 reports that school boards submit to the ministry. School boards are required to report their annual budget expenditures to the Ministry of Education each year in the form of consolidated statements of financial position, known as Schedule 10. The analysis includes all expenses at the district level that were directly related to instructional and school operational expenses. I excluded expense categories that were only indirectly associated with the delivery of secondary education (e.g., costs associated with trustees, directors and supervisory officers, school board administration, and amortization), transportation, geographic circumstances, and pupil accommodation (e.g., capital projects). I omitted these expenses items for two reasons. First, they are too far removed from the delivery of classroom instruction and, therefore, not directly tied to fail rates. Second, if they were included, they would greatly inflate the costs of failure in a way that contradicts the aim of the study: to produce reliable estimates of the level of expenditure tied to secondary course failure.

Methodology

There is no single "correct" approach to estimation, which is not to say that all approaches are created equally. One of the aims of the present study was to develop an approach

that addressed the complexities of funding education in the province, but was also straightforward to apply. The methodology employed is discussed in the following sections.

Parameters and Assumptions

The unit of analysis in my study was secondary students who did not earn their enrolled course credit(s). There are two ways to determine the unit cost per individually enrolled course: the average cost approach or the marginal cost approach. The average cost approach averages the cost of providing education over the total number of students receiving instruction. The advantage of this approach is that it is simple to apply. One shortcoming of the approach is that it does not account for that fact that the cost of servicing each student is not the same. The marginal cost is the increase in total cost of education provision for adding one additional unit—in this case a secondary student. To illustrate the difference between the two, assume in a secondary classroom there are 26 students. Also assume (for simplicity) that the cost of one teacher's salary is $49,000 and books $1,000. At the end of the course, the 26th student in the class fails to earn their course credit. What is the cost of failure for that one unearned course credit?

Using the average cost approach, the total cost of education provision would be the teacher's salary plus books ($49,000 + $1,000 = $50,000), which would be divided by 26 (total student units). The cost of each course would be $1,923 per pupil ($50,000 / 26 students = cost/student), and consequently the cost for the one unearned course credit would be $1,923. Using the marginal cost approach it would be necessary to estimate the cost of failure for the 26th unearned unit. Taking a marginal cost approach in my study would have been quite challenging. It would have required an independent examination of each failing student, and the

available data does not allow for that level of specificity. In any case, the gain would not likely be worth the effort. Furthermore, when the number of failures is very large, as is the case in this study, the difference between the marginal and average cost diminishes. Both approaches provide different estimates of the costs of failure, but neither is superior to the other. While this study did not explore the marginal cost, it is worth noting that it was considered.

I made a number of assumptions to facilitate my analysis. While conducting research I was presented with conflicting information regarding the number of course credits required for Ontario students to be considered full time. For the purposes of this study, it was assumed that a full-time student completes an average of 7.5 course credits (30 credits/4-year program) in a school year, which is line with the average cost approach.[4]

As previously mentioned, the GSN formula provides differentiated amounts of funding to school boards based on total numbers of students and specific conditions within the board. Relevant to this study, Ontario school boards receive funding to provide special education (i.e., Special Education Grant) and English as a second language services (i.e., Language Grant). This means the cost of failure for a student who receives these additional services is more than for a student who does not receive these services. If the cost of these additional services is averaged over the entire student population, then the cost for educating a standard pupil is inflated and the cost of educating a student who receives additional services is underestimated. In Ontario, funding provided through the Special Education Grant is enveloped and must be spent on students identified as having special education needs (Ontario Ministry of Education, 2008). To account for this, the expenditure tied to failure for the Total Student Population (TSP) was

[4] At the time of research, a then-leading ministry official recommended using 7.5 courses, given the methodology of my study; in later discussions nearer to the time of publication, ministry officials maintained that full-time students need only be enrolled in six courses and additional funding is not provided past this threshold. (Ministry of Education, personal communication, June 10, 2015).

considered first, followed by the volume and expense for three student subgroups—the Special Education Population (SEP), the English as a Second Language Population (ESLP) and the Standard Pupil Population (SPP).

For simplicity, I assumed that Total Student Population = Special Education Population + English as a Second Language Population + Standard Pupil Population. One challenge with this assumption is that each student group is not mutually exclusive, as there are ESL students who also receive special education support services. The methodological implication is that the number of course failures and enrolments for the SPP were determined by subtracting from the TSP the corresponding number of special education and ESL students. Because a small number of students received both special education and ESL, these students were subtracted twice, essentially resulting in a slight overestimation of the number of ESL and special education numbers and a slight underestimation of standard pupils. To get a sense of how small, according to the enrolment data provided by the ministry, total ESL enrolment for the province was 16,944 in 2008–2009. Dividing this number by the total number of secondary enrolments, which is 709,099, means that 2.39% of course enrolments were ESL students. Therefore, even if half of the ESL students also received special education services, the potential maximum overestimate is 1.19%. In short, the double counting in enrolments did not have a major impact but is worth mentioning.

Data Sources

I used two data sources for the study: OnSIS data and Schedule 10 expenditure data for the 2008–2009 school year. I selected this year because the data are reliable and ready to share; moreover, choosing a later period would likely not result in any material difference in volume or

expenditure. I received the data in six sets. Data sets 1 through 3 provided the total number of course passes and failures for TSP, SEP, and ESLP. Data sets 4 through 6 provided total student enrolments for each school board included in the study for the same student groups (for performing various calculations). All data received were depersonalized (all student identifiers removed). The ministry completed all of this work prior to releasing the data sets.

The Elementary and Secondary Business and Finance Division of the Ontario Ministry of Education provided the expenditure data specific to each of the 70 districts included in the study.[5] These data reflected reported cash flows in each of the school boards for a given school year.[6] Drawing from these data presented many advantages. First, the data represented the most accurate accounting of expenditures made by school districts during the academic year. Second, the expenditure data include revenues received through the GSN funding formula, which accounts for the board-by-board differentiated funding based on the total number of students and on local conditions. In other words, the financial data captured the differences in expenditures by school districts according to their priorities and ministry-set priorities (e.g., enveloped special education funding).

Data Analysis

I conducted the analysis of course pass/fail rates and the estimated expenditure tied to course failure at the district level before aggregating it to the provincial level. This was important because decisions around educational expenditure happen primarily at the district level in

[5] There are only 70 publicly funded school boards with secondary schools. The other two publicly funded boards only have elementary schools.

[6] Note that Schedule 10 provides a number for total education spending and a separate set of numbers for special education spending only. This breakout is the result of Ontario's funding for special education being enveloped from other student funding.

Ontario's public school system, and not the school level. Furthermore, conducting the analysis at the school level could have resulted in a school being singled out, which is contrary to the overall aims of the project.

Data analysis occurred in four stages. The first stage estimated the total number of secondary course failures in Ontario during the 2008–2009 period. I added the total number of course failures for each district, and then aggregated the districts to determine the provincial total. For courses with fewer than six student failures, the ministry suppressed the actual value to protect the identity of students. This affected the official count because the actual value for hundreds of cells was unknown. In order to estimate the total volume of failure, a value needed to be added in each of the suppressed cells. I converted all suppressed cells to the value of 2.5 (or halfway between the possible range of values between 0 and 5). I repeated these steps for data sets 1, 2, and 3 to determine the total number of failures for each student population and for each school board type.

The second stage examined how fail rates related to factors such as subject area, grade level, course level, and additional services. The data sets provided by the ministry listed the courses offered in each school board as well as the name of the school board, district type, course code (which identifies subject area: e.g., English, mathematics, science), grade level (9, 10, 11, or 12) and course level (i.e., Academic, Applied, Open, University, University/College, College, Workplace). Having course codes made it possible to analyze specific courses along these key factors. I conducted the factor breakout analysis for TSP, SEP, and ESLP using Excel.

The third stage of analysis involved estimating the level of expenditure tied to secondary course failure for school districts. The recommended steps when conducting a cost analysis using the RCM approach are (a) be clear about the scope of the activity, (b) identify and categorize the

expense items necessary for estimating cost, and (c) assign a monetary value to expense items for each of the services. Accordingly, these three steps helped to organize the analysis. A fourth step involved adding up the expense items and estimating the total fiscal costs of secondary course failure. The specific analytical processes of each step, as well as the key mathematical operations, are outlined in Appendix A and Appendix B.

Findings

In the 2008–2009 year, students earned a passing grade in the vast majority of enrolled secondary courses and this was true across all student populations. For the TSP, there were 5,082,543 secondary course attempts across 70 school boards in Ontario: 4,682,535 completed successfully (or passed) and 400,008 unsuccessfully (or failed). This means 92.1% of all enrolled secondary courses were completed successfully and 7.9% unsuccessfully. The failure rates for the TSP (7.9%), the SEP (12.3%), the ESLP (13.1%), and the SPP (6.8%) show that students who received special education or English second language services had higher course failure rates. For example, students receiving special needs and ESL students were nearly twice as likely to fail a course as their SPP counterparts. Table 1 below summarizes the total number of enrolments, course passes and failures, and total course attempts for TSP in Ontario and for the three student subgroups SEP, ESLP, and SPP.

Table 1
Total Number of Enrolments, Course Passes/Failures, and Total Course Attempts for TSP, SEP, ESLP, and SPP in Ontario, 2008–09

	TSP		SEP		ESLP		SPP	
Enrolments	709,099		125,097		16,944		567,058	
Passes	4,682,535	92.1%	723,408	87.7%	102,271	86.9%	3,856,856	93.2%
Failures	400,008	7.9%	101,054	12.3%	15,458	13.1%	283,496	6.8%
Total attempts	5,082,543	100%	824,462	100%	117,729	100%	4,140,352	100%

Note: The numbers in Table 1 (and all subsequent tables) for SPP were derived by subtracting the number of students identified as having special needs and receiving ESL services from TSP. For example, the total number of passes for SPP was derived by taking the number of passes for TSP and subtracting the total number of passes for SEP and ESLP (4,682,535 – 723,408 – 102,271 = 3,856,856).

Another significant finding has to do with district type. The average fail rate was higher in English public boards compared to the other three, with the French boards having the lowest fail rate (see Table 2). The finding could suggest that some boards may be struggling to provide services to SEP and ESLP, resulting in higher course failures (see Appendix C). However, it is not possible with these data to confirm if this is the case.

Table 2
Course Fail Rates for Each of Ontario's Four District Types

School board	TSP	SEP	ESLP	SPP
70 school boards	7.9%	12.3%	13.1%	6.8%
English Public	9.0%	13.4%	13.8%	8.0%
English Catholic	5.9%	10.3%	10.9%	4.9%
French Public	4.4%	9.2%	-	3.5%
French Catholic	2.5%	5.4%	-	2.0%

Fail rates also varied considerably across subject areas. English and mathematics had the highest fail rates (8.5% and 11.7%) compared to the other main subject areas (see Table 3). These subject areas also had high course enrolments relative to other subject areas (presumably because they are required courses for graduation), which resulted in 58,580 English and 79,096 math course failures for TSP across the province. The fail rate for mathematics was consistently

and particularly high across the student populations—TSP (11.7%), SEP (15.1%), ESL (17.2%), and SPP (10.9%)—compared to the other core subject areas.

Table 3
Total Number of Attempts and Percent of Failures by Curriculum Subject Area in Ontario by Student Population Subgroups

Subject area	TSP		SEP		ESLP		SPP	
	# of attempts	% fail	# of attempts	% fail	# of attempts	% fail	# of attempts	% fail
The Arts	439,046	**5.9**	71,812	**11**	9,817	**10.8**	357,417	**4.8**
Business Studies	204,575	**7.2**	25,839	**13.1**	5,474	**13.2**	173,262	**6.1**
Canadian and World Studies	682,854	**7.4**	106,406	**12.9**	14,527	**11.6**	561,921	**6.4**
Classical Studies and International Languages	23,150	**6.1**	2,498	**11.7**	515	**12.8**	20,137	**5.2**
Computer Studies	28,376	**6.8**	3,952	**10.9**	542	**12.7**	23,882	**6**
English	693,234	**8.5**	113,562	**12.4**	4,865	**13.1**	574,807	**7.6**
English Literacy Development (ELD)	2,218	**21.9**	189	**12.2**	797	**17.4**	1,232	**26.3**
English Second Language (ESL)	23,374	**13.7**	407	**21.9**	22,967	**13.7**	0	**-**
French	225,341	**3.5**	21,715	**6.3**	1,823	**6.6**	201,803	**3.2**
Guidance and Career Education	240,295	**10.9**	51,859	**14.1**	6,467	**13.7**	181,969	**9.9**
Health and Physical	392,085	**5.5**	66,496	**9.8**	8,389	**8.8**	317,200	**4.5**
Interdisciplinary Studies	23,832	**7.6**	3,100	**10.8**	123	**14.6**	20,609	**7.1**
Mathematics	673,712	**11.7**	104,004	**15.1**	16,420	**17.2**	553,288	**10.9**
Native Languages	1,426	**20**	379	**24.8**	-	**-**	1,047	**18.2**
Native Studies	3,864	**14.9**	829	**23.8**	5	**0**	3,030	**12.5**
Ontario Secondary School Literacy Course	13,261	**12.6**	6,154	**12.7**	377	10.6	6,730	**12.6**
Science	627,081	**7.3**	85,128	**11.2**	13,086	**13.5**	528,867	**6.5**
Social Sciences and Humanities	432,159	**7**	62,216	**11.8**	6,143	**14.1**	363,800	**6.1**
Technology Education	349,660	**7.7**	86,441	**12.2**	5,007	**12.4**	258,212	**6**
TOTAL	**5,079,543**	**-**	**812,986**	**-**	**117,344**	**-**	**4,149,213**	**-**

Note: Excluded from this table are courses with subject codes "K" and "Y," as they are not listed in the curriculum course list. Subject area "K" had few course offerings and all areas contained either empty or mostly suppressed values in the pass/fail columns.
Note: Because of the way SPP is calculated (by subtracting SEP and ESLP from TSP) the number of SPP attempts is higher than expected, due to the lower than expected 10,000 course passes identified in the SEP table.
Note: percentages fail have been rounded to 1 decimal place.
Source: Ontario Ministry of Education, 2011

The noncore subject areas had the highest fail rates compared to all other courses and across the student population groups. However, the total number of course attempts for all five noncore subject areas made up less than 1% of course attempts overall. Similarly, the fail rates were particularly high for Applied, College, and Workplace level courses (see Table 4). The potential implications of this latter finding are discussed in a subsequent section.

Table 4
Total Number of Attempts Broken Out by Course Type and Grade Level for Each Student Group

Subject area	TSP		SEP		ESLP		SPP	
	# of attempts	% fail	# of attempts	% fail	# of attempts	% fail	# of attempts	% fail
Grade 9—Academic	521,403	3.8	37,338	5.6	7,624	10.3	476,441	3.6
Grade 9—Applied	250,520	12.8	75,356	14.2	8,588	15.9	166,576	11.9
Grade 9—Open	514,720	5.1	105,809	9.6	14,636	11	394,275	3.6
subtotal	**1,286,643**	**6.1**	**218,503**	**9.7**	**30,848**	**12.2**	**1,037,292**	**4.9**
Grade 10—Academic	452,607	5.4	34,152	9.6	9,116	**11.9**	409,339	4.9
Grade 10—Applied	216,226	16.3	59,704	16.3	6,338	**15.5**	150,184	16.3
Grade 10—Open	773,244	7.7	145,466	13.7	21,017	**11.6**	606,761	6.15
subtotal	**1,442,077**	**8.2**	**239,322**	**13.8**	**36,471**	**12.3**	**1,166,284**	**7**
Grade 11—University	355,323	5.9	24,299	6.4	5,453	**13.5**	325,571	5.8
Grade 11—University/College	334,713	7.3	36,420	11.2	4,417	**13.7**	293,876	6.7
Grade 11—College	214,678	13.3	44,073	15.1	2,600	**17.1**	168,005	12.8
Grade 11—Workplace	83,850	14.6	36,151	15.5	857	**17.3**	46,842	13.9
Grade 11—Open	283,452	10.1	54,896	14.4	4,956	**13.7**	223,600	9
subtotal	**1,272,016**	**9.1**	**195,839**	**13.1**	**18,283**	**14.3**	**1,057,894**	**8.2**
Grade 12—University	470,531	5.9	32,594	6.2	2,139	**12.1**	435,798	5.8
Grade 12—University/College	215,453	5.6	20,215	8.6	897	**12.8**	194,341	5.3
Grade 12—College	142,281	11.1	26,516	12.5	839	**13.3**	114,926	10.7
Grade 12—Workplace	32,425	11.1	13,706	12.2	177	**21.5**	18,542	10.1
Grade 12—Open	99,310	11.1	25,773	13.2	1,490	**14.2**	72,047	10.3
subtotal	**960,000**	**7.3**	**118,804**	**10.2**	**5,542**	**13.2**	**835,654**	**6.9**
TOTAL	**4,960,736**	**-**	**772,468**	**-**	**91,144**	**-**	**4,097,124**	**-**

Note: filters were set to include all courses ending in D (Academic), P (Applied), U (University), M (University/College), C (College), E (Workplace), O (Open).
Courses were omitted ending in any other letter or number, including: L, K, R, T, H.

For the 2008–2009 academic year, I estimate the total level of expenditure tied to course fails for Ontario's public education system to be $472,729,698, or 7.7% of total instructional and

operational spending. The percentage of each school board's budget spent on course fails varied considerably across the four board district types; over half spent upward of 5% of their instructional and operational budgets (see Table 5). English public boards had the highest overall expenditure tied to course fails. Given that 67% (478,223/709,099) of secondary students in Ontario are enrolled in English public secondary schools, this is unsurprising.

Table 5
Gross Cost of Failure for TSP

School board	Gross Cost of failure	Gross Cost of instruction and school operations*	Gross Cost of failure as % of Gross instructional and operational budget for TSP†	Average cost per course
All 70 school boards	$472,729,698	$6,161,170,319	7.7%	$1,183
EN Public	$363,690,841	$4,151,601,104	8.8%	$1,193
EN Catholic	$100,487,999	$1,727,331,454	5.8%	$1,123
FR Public	$3,413,052	$77,843,630	4.4%	$1,768
FR Catholic	$5,137,807	$204,394,131	2.5%	$1,514

* Secondary school instructional and school operational costs only.
† As expected, these numbers are almost identical to the percentage of students who fail, with the variance accounted for in the different course costs.

The expenditure per course was higher for the two French boards compared to English boards; they have higher per student funding, for various reasons. The average expenditure tied to a course failure for the TSP across 70 school boards was $1,183. It was $1,767 for the SEP, which was nearly double the cost per course for the ESLP/SPP at $1,052 (see Tables 6 and 7).

Table 6
Gross Cost of Failure for SEP

School board	Gross Cost of failure	Gross Cost of instruction and school operations	Gross Cost of failure as % of Gross instructional and operational budget for SEP	Average cost per course
All 70 school boards	$178,541,274	$1,649,410,912	10.82%	$1,767
EN Public	$132,816,706	$1,143,573,916	11.61%	$1,783
EN Catholic	$41,481,288	$437,524,188	9.48%	$1,678
FR Public	$1,662,895	$17,335,951	9.59%	$2,602
FR Catholic	$2,580,384	$50,976,858	5.06%	$2,149

Table 7
Gross Cost of Failure for ESLP/SPP

School board	Gross Cost of failure	Gross Cost of instruction and school operations	Gross Cost of failure as % of Gross instructional and operational budget for ESLP/SPP	Average cost per course
All 70 school boards	$314,353,049	$4,511,759,407	6.97%	$1,052
EN Public	$244,021,162	$3,008,027,188	8.11%	$1,059
EN Catholic	$65,285,439	$1,289,807,266	5.06%	$1,008
FR Public	$2,003,718	$60,507,679	3.31%	$1,552
FR Catholic	$3,042,730	$153,417,273	1.98%	$1,388

Mathematics stood out as having the highest number of failures across the student groups (TSP 79,096; SEP 15,738; ESLP/SPP 63,358) and the highest total expenditure ($93,570,568; $27,809,046; $66,652,616, respectively) compared to all other subject areas (see Table 8). English had the second highest number of failures (58,580; 14,043; 44,537, respectively) and total cost ($69,300,140; $24,813,981; $46,852,924, respectively). Using TSP estimates, approximately $162 million was tied to course failure in English and mathematics alone.

Table 8
Number of Failures and Cost by Subject Area for Each Student Population Group

Subject area	TSP		SEP		ESLP/SPP	
	# of fails	Cost of failures	# of fails	Cost of failures	# of fails	Cost of failures
The Arts	26,039	$30,804,137	7,872	$13,909,824	18,167	$19,111,684
Business studies	14,702	$17,392,466	3,385	$5,981,295	11,317	$11,905,484
Canadian and World Studies	51,486	$60,907,938	13,685	$24,181,395	37,801	$39,766,652
Classical Studies and International languages	1,409	$1,666,847	292	$515,964	1,117	$1,175,084
Computer Studies	1,937	$2,291,471	430	$759,810	1,507	$1,585,364
English	58,580	$69,300,140	14,043	$24,813,981	44,537	$46,852,924
English Literacy Development (ELD)	486	$574,938	23	$40,641	463	$487,076
English Second Language (ESL)	3,199	$3,784,417	89	$157,263	3,199	$3,365,348
French	7,877	$9,318,491	1,369	$2,419,023	6,508	$6,846,416
Guidance and Career Education	26,153	$30,938,999	7,290	$12,881,430	18,863	$19,843,876
Health and Physical	21,614	$25,569,362	6,500	$11,485,500	15,114	$15,899,928
Interdisciplinary Studies	1,820	$2,153,060	334	$590,178	1,486	$1,563,272
Mathematics	79,096	$93,570,568	15,738	$27,809,046	63,358	$66,652,616
Native Languages	285	337,155	94	$166,098	191	$200,932
Native studies	577	$682,591	197	$348,099	380	$399,760
Ontario Secondary School Literacy Course	1,670	$1,975,610	782	$1,381,794	888	$934,176
Science	45,431	$53,744,873	9,463	$16,721,121	35,968	$37,838,336
Social Sciences and Humanities	30,423	$35,990,409	7,326	$12,945,942	23,097	$24,298,044
Technology Education	26,757	$31,653,531	10,511	$18,572,937	16,246	$17,090,792
Note: this table excludes course subject areas having codes not listed in the Curriculum Guidebook.						

Limitations of the Study

School districts have considerable discretion in how they spend their non-enveloped allocations, and the budget estimates reported back to the Ministry of Education are only estimates. Ministry officials confirmed that there is no direct tie between the expenses listed in Schedule 10 and how school boards actually spent their funding, with the exception of enveloped funds (i.e., Special Education Grant). This means that even though I used the most reliable available data, the estimates are not final or exact figures.

Another limitation is that I examined only one year of data. By examining data for only one academic year, it is not possible to comment on any pattern in expenditure over time. However, I believe that if I were to conduct the study in 2016 that the overall patterns reported here would hold. My rationale is that there have been no major governmental or policy changes in education: the Liberal party has formed the provincial government of Ontario since 2003 and remains in power at the date of publication. Data further support this presumption of continuity. In 2014, EQAO reported that students continue to struggle in math, particularly secondary students enrolled in Applied-level courses (EQAO, 2014). That special needs students struggle more than other students to earn their enrolled course credits has also likely not changed. In addition, while Ontario's 2015 graduation rate of 85.5% after 5 years is 6.5% higher than the 79% rate in 2008–2009, this rate continues to suggest that some students are failing their courses (Ontario Ministry of Education, 2016).[7] Although not directly tied to secondary course fail rates, it is logically connected to secondary noncompletion: that is, if students are failing their courses, some will have insufficient credits to graduate at the end of four years. In short, if the study were repeated with more recent data, there would still likely be thousands of course failures and millions of dollars in expenditures tied to the outcome, and distributed along similar lines.

Discussion

This study presents data relating to the total number of secondary course failures in Ontario's K–12 public education system, how they are distributed, and their associated level of

[7] Data analysts at the Ontario Ministry of Education confirmed that part of the makeup of the remaining 14.5% who did not graduate on time included students who failed to earn enough course credits to graduate on time, but also students who left the province, deceased students, students with special needs who were not working toward a diploma, students with enough credits to graduate but missing the literacy requirement and community service hours (required for graduation in Ontario), or did not have sufficient compulsory credits necessary for graduation (Ontario Ministry of Education, personal communication, June 10, 2015).

expenditure. In one respect, the research confirms what was already broadly known and expected from other research: students are failing courses and this costs money (Dobson & Sharma, 1999; Eide & Goldhaber, 2005; Levin, 2008a; OECD, 2007, 2012).

Beyond this basic understanding, the volume, distribution, and direct expenditure tied to secondary course failure in the short term (one academic year) had not been well documented in the literature (Levin, 2008b). The research presented here brings additional, more in-depth data into the public realm: Applied- (Grade 9 and 10), College-, Workplace-, and Open-level courses (Grade 11 and 12) have a greater number of student course failures compared to Academic- or University-level courses. Further, Tables 3 and 4 consistently point to SEP and ESLP students failing at much higher rates in all subject areas and across grade levels.

The results raise questions about why SEP and ESLP students fail at higher rates despite receiving additional supports; they also raise questions about the aims of Ontario's curriculum. Regarding the former, should parents and the public expect to see fail rates for SEP and ESLP be comparable to SPP given the additional supports received? Or do the specific and complex learning needs of SEP and ESLP groups (e.g., SEP students have a range of physical, cognitive, and emotional learning challenges) render this expectation unrealistic and unreasonable? The results of this study allude to but cannot address this question, pointing to a future research possibility. Concerning curriculum, one of the official aims of Ontario's is to "enable students to choose courses that are suited to their strengths, interests, and goals" (Ontario Ministry of Education, 2000, p. 4)—in other words, it is implied that the courses in each pathway (e.g., applied, college, etc.) are designed for students to succeed, not fail. Even though this study was not designed to comment on the effectiveness of Ontario's curriculum and pathway structure, the results allude to curriculum as a factor associated with supporting student academic success or

failure—another potential future research direction. Other analyses have raised the question about whether the ministry's current offerings of specialty subjects and streamed programming are producing the intended results. For example, EQAO notes that "persistently low success rates for students in both the applied English and Applied Math courses suggest a review of those courses is warranted" (EQAO, 2014, p. 1).

Extra-governmental research and Ontario's own policy literature is clear that if provincial, district, and school leaders had a better understanding of the level of resources tied to failure, then it might help them make the best use of available resources in their effort to improve student outcomes (Leithwood, 2013; Levin & Naylor, 2007; OECD, 2007, 2012; Ontario Ministry of Education, 2014a). The estimates presented in this article can support the work of education leaders and inform their decision-making about resources in two ways. First, the findings reveal that students fail math and English courses in greater numbers—a cost estimated to be $162 million for these two subject areas alone. School leaders could use the data presented here to advocate for additional investments; this strategy recently proved effective in Ontario with the provincial government's decision to invest $60 million in response to low math scores on standardized tests (Alphonso, 2016). Second, ministry and district leaders can use this data to target existing resources (e.g., funding, but also time and personnel) into these two subject areas across all grade levels and student types to reduce fail rates—an approach supported in the education administration and resource literature (Young et al., 2014). These data provide a unique evidence base to inform and support such strategies.

Methodologically, other studies have used secondary dropouts as the measure of failure and estimated the private or public costs (Canadian Council on Learning, 2009); the present study focused on the direct budget impact of secondary course failure—a novel approach in the

literature (OECD, 2007, 2012; Eide & Goldhaber, 2005; Levin, 2008a). This research provides a methodological framework for thinking about levels of expenditure tied to course failure at the system and school board levels. Currently no such framework exists. Even though other scholars and government officials might propose different methodologies to estimate the amount of expense tied to course failure, my findings demonstrate that it is both possible and useful to generate such estimates using my framework.

Relatedly, the current situation regarding data on academic failure at the secondary level in Canada is that ministries and departments of education report on high school graduation rates, but do not publicly report on secondary course failures nor estimates of the associated costs. Some jurisdictions publish results related to academic failure—for example, see Government of Newfoundland and Labrador (2015) for the percentage of passes for Public Exam Courses—but this is the exception and not the rule. In short, like the methodology, the release of the data in itself has the potential to make an important contribution to the literature.

A final and important implication of this work is the potential to influence two ongoing public debates across Canada: (a) how much money should be invested in students and how that money should be used and (b) the role academic failure should play in schools (Levin, 2008a, 2008b). Regarding the first debate, the results reported here reinforce the resource decision-making of senior education leaders in support of student success. Ontario has introduced a number of new or revised policies, programs, and other initiatives aimed at student success. One such example is Ontario's lauded Dual Credit program, which aims to help students who are at risk of not completing their diploma to graduate from secondary school and increase their likelihood of pursuing further education (Whitaker, 2011). Investments in innovative programs like these are translating into measurable results. In 2004, the 5-year graduation rate was 68%; in

2015, the rate was 85.5%, a climb of 17.5 percentage points (Ontario Ministry of Education, 2016). The data reported here provide an evidence base to support additional investments in initiatives that support student success.

Regarding the second debate, this study indirectly questions the role of academic failure—and specifically course failure—in schools, which inevitably raises the counter-question, "What's the alternative?" Nobody, including this researcher, is advocating for schools to pass all students at the secondary level regardless of attainment in an effort to reduce the fiscal burden of failure to the public purse. More practically, this research invites researchers and families to use the results of this study to hold provincial-, district-, and school-level leaders accountable for education outcomes in their system, and to advocate for additional investment in program innovation aimed at student success, such as the aforementioned Dual Credits programs. Public consensus on the role of academic failure at the secondary level might be unattainable, but surely it is in the best interests of students and the general public to focus our limited education resources on student success. The data reported here provide an evidence base to suggest that vulnerable student groups are disproportionately represented in course failure rates: an unacceptable situation given Ontario's stated aims of education and Canadian values regarding public education (CMEC, 2008; Ontario Ministry of Education, 2014b; Young et al., 2014). The public release of 2012 PISA results in Alberta, the resulting upset, and subsequent political response is yet another recent example of the power of data to foster lively public debate on key educational issues and to empower communities and parents to advocate for change (Johnson, 2014).

Applications

These findings point to a few practical applications that could help district and system leaders drive positive educational outcomes and pursue efficient operational practices. Reducing all course failures in the province could result in efficiencies up to $472 million, though I acknowledge that not all of these costs are fully recoverable.[8] It is possible to envision, however, how some of these potential efficiencies could be realized in a secondary school or school district having a high number of course failures. One challenge is that school boards in Ontario receive funding based on student enrolment, so if boards successfully reduce failure, they will also reduce enrolments and thus decrease their revenue. To address this challenge and provide additional positive incentive for school boards to reduce failures, district leaders could reach an agreement with the ministry allowing them to keep any monies realized by reducing course failures. Schools and school boards could then use the money to invest in keeping teachers and introducing more progressive assessment practices or intensive tutoring. This arrangement would create additional positive incentive for school and district leaders to continue their efforts to reduce course failure. OECD has acknowledged this challenge in their work to reverse the culture of grade repetition in schools and proposed a similar idea (OECD, 2012).

Education leaders can also use the statistics reported here as district- and system-level performance indicators, as proposed by Dobson and Sharma (1999) for postsecondary education institutions 16 years ago. For example, the province could share school board and provincially aggregated course pass/fail rates with district leaders to allow for comparative analysis and reflection, and encourage dialogue among education leaders. Another pertinent statistic to share

[8] The $472 million estimate is generated using the average cost approach. In practice, the costs of provision do not decrease with each student that fails. In other words, the volume of failures reduced would have to exceed a certain threshold at which a school would be able to reduce the number of classes held in order to recover costs.

would be the average number of course failures per student enrolled in each school board. These statistics could help ministry and district leaders identify those boards that seem to be more successful than others at helping students complete their enrolled courses. As importantly, education leaders can use these statistics to communicate results about improvement to the general public, contributing to a culture of transparency around results that can build public confidence—and potentially further investment—in public education (Barber, 2004).

Conclusion

This article reports on a study conducted to examine the volume and distribution of secondary course failure and its direct budget impact on Ontario's K–12 public education system. The study used a descriptive accounting method to estimate the annual expenditure tied to secondary course failure, taking into account some factors known to be systemically related (e.g., grade level, subject area, additional services received).

The overall conclusion for education leaders, scholars, and bureaucrats is that significant funds are tied to secondary course failure, and these resources represent potential efficiencies that could be spent to better serve the needs of students and schools. This paper outlines a useful framework for thinking about the level of expenditure tied to secondary course failures at the system and board levels. Moreover, the estimates and statistics presented can inform the public debate on the role of academic failure in schools and can be used by education leaders to make practical improvements to resource planning and decision making aimed at improving student outcomes. Further, these contributions to educational administration and policy have the potential to inform future research estimating educational expenditure.

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Appendix A:

Mathematical Operations

Calculation 1: Secondary gross cost of failure **TSP**, school board level

Gross cost of secondary education provision for TSP
/ Total number of secondary students enrolled in board[i]
= Board average cost per pupil for one school year

Board average cost per pupil for one school year
/ average number of secondary credits completed by a student in one year[ii]
X total secondary student course failures
= Gross cost of secondary course failure for TSP

Calculation 2: Secondary gross cost of failure for **SEP**, school board level

Gross cost of secondary education provision for SEP
/ Total number of special education students enrolled in secondary schools in the board
= Board average cost for one school year per special education pupil

Board specific average cost for one school year per special education pupil
/ average number of secondary credits completed by a student in one year
X total number of special education student course failures
= Gross cost of secondary course failure for SEP

Calculation 3: Secondary gross cost of failure, **ESLP and SPP**, school board level

Gross cost of secondary education provision for the ESLP and SPP
/ Total number of ESL and Standard Pupils enrolled in secondary schools in the board
= Board average cost for one school year per ESLP/SPP

Board specific average cost for one school period per ESLP/SPP
/ average number of secondary credits completed by a student in one year
X total number of ESL and standard pupil course failures
= Gross cost of secondary course failure for ESLP/SPP

Calculation 4: Secondary cost of failure, provincial level

For each student population, total the amounts for each board to get the provincial cost of failure.

Calculation 5: Direct cost of failure, school board level

Repeat the steps in calculations 1, 2, and 3 using direct costs instead of gross cost.

[i] The ministry uses Average Daily Enrolment to generate funding for boards. I did not have access to this data so used headcount enrolment.
[ii] This calculation gets **the school board average cost per secondary course**.

Appendix B:

The Specific Activities Under Each RMC Recommended Step

Step 1: be clear about the scope of the activity.

The conceptual framework scoped the analysis.

Step 2: identify and categorize the expense items necessary for estimating the level of expenditure.

The instructional and operational expense items were categorized as either a direct or indirect. The categorization is based on their direct or indirect role in the delivery of education. Expenditure tied to failure for each district is calculated twice, first using gross (direct and indirect expenditures) and again using direct expenditures (note that only gross expenditure is reported in this article, see Faubert, 2013). The rationale was to establish a range of the total level of expenditure.

Gross Expenditure	
Direct Expenditure	**Indirect Expenditure**
Classroom - Classroom teachers* - Supply teachers* - Teacher assistants* - Textbook, learning materials & classroom supplies, & equipment - Classroom computers	Extended Classroom - Professionals, paraprofessionals, and technicians* - Library and guidance* - Department heads* - Staff development Non-classroom - Principals and Vice-principals* - School office* School operational expenses - Custodial operations - Maintenance operations - Utilities - School operations and maintenance administration - Leases
Source: Ontario Ministry of Education, 2009—Net expenditure for compliance * includes salaries and employee benefits	

Step 3: assign a monetary value to expense items.

School boards use the same expense categories for reporting expenses back to the ministry, which made it simple for me to develop a template of expense items for each school board and add a value to each expense item. I developed an excel template to record the expense items for each school board. I copied this template to create 70 spreadsheets—one for each school board[iii]. I added a value to each expense category for each school board by matching the Schedule 10 values provided by the ministry to the corresponding cell in the spreadsheet.

Step 4: add up the expenses and estimating the total fiscal costs of failure.

With the expense items and their values listed in the spreadsheet, I calculated the gross cost of secondary provision for both TSP and SEP using the average cost approach. To calculate the amount for ESLP and SPP, recall that the gross cost of secondary education provision for TSP is the total of SEP, ESLP, and SPP spending. By subtracting the total gross cost of secondary provision for SEP from TSP, the remainder is the total gross cost of provision for ESLP and SPP.[iv]

[iv] I determined later in the study that it was not possible to isolate ESLP spending from SPP spending, so I combined these expense items under the title ESLP/SPP expenses.

Appendix C:

Course Fail Rates for Each School Board by Student Population Group

School Board #	TSP	SEP	ESLP	SPP	School Board #	TSP	SEP	ESLP	SPP
1	10.9%	17.0%	-	9.6%	**36**	4.8%	14.3%	-	3.2%
2	10.5%	15.8%	-	9.4%	**37**	5.4%	13.1%	-	4.5%
3	13.8%	20.8%	-	12.7%	**38**	4.5%	9.1%	-	3.4%
4	10.5%	14.1%	-	9.6%	**39**	2.3%	3.8%	-	1.9%
5	14.2%	22.3%	-	12.7%	**40**	5.2%	7.9%	8.0%	4.6%
6	6.6%	13.6%	-	5.4%	**41**	4.0%	7.6%	11.8%	3.4%
7	7.9%	14.9%	-	6.8%	**42**	3.9%	9.5%	0.0%	2.7%
8	11.0%	17.4%	-	9.4%	**43**	9.3%	12.4%	13.1%	8.3%
9	7.6%	11.4%	-	6.6%	**44**	4.0%	7.4%	0.0%	3.1%
10	3.0%	5.0%	-	2.6%	**45**	3.4%	6.5%	4.8%	2.9%
11	6.5%	13.0%	-	5.4%	**46**	7.1%	12.8%	9.1%	6.1%
12	6.0%	9.5%	8.7%	5.2%	**47**	7.8%	14.0%	9.9%	6.6%
13	9.1%	16.1%	10.1%	7.8%	**48**	7.3%	17.9%	15.6%	5.8%
14	12.7%	18.1%	10.2%	11.4%	**49**	3.3%	6.3%	8.9%	2.8%
15	9.7%	13.6%	15.5%	8.9%	**50**	6.0%	11.1%	13.3%	5.1%
16	7.7%	12.6%	11.0%	6.3%	**51**	4.1%	9.9%	10.3%	3.2%
17	5.8%	8.7%	12.1%	5.3%	**52**	6.2%	10.9%	15.5%	4.5%
18	4.5%	6.6%	-	3.8%	**53**	3.4%	6.9%	8.4%	2.7%
19	8.9%	13.1%	8.8%	7.9%	**54**	4.7%	8.7%	-	4.2%
20	8.1%	13.3%	14.3%	7.1%	**55**	3.5%	6.2%	-	2.5%
21	10.0%	14.8%	7.9%	8.8%	**56**	5.0%	8.0%	12.3%	4.2%
22	4.4%	6.9%	15.3%	4.0%	**57**	4.6%	11.4%	-	3.2%
23	14.1%	19.4%	7.2%	12.9%	**58**	3.2%	7.2%	14.2%	2.3%
24	7.6%	9.6%	18.9%	7.1%	**59**	9.0%	15.9%	-	6.0%
25	11.7%	18.1%	14.2%	10.8%	**60**	5.2%	10.5%	-	3.3%
26	8.4%	12.6%	16.8%	7.7%	**61**	4.8%	9.5%	-	4.2%
27	6.9%	9.7%	8.9%	5.9%	**62**	3.5%	7.0%	-	2.9%
28	8.9%	14.1%	14.3%	7.3%	**63**	2.7%	5.8%	-	2.2%
29	4.4%	7.2%	13.6%	3.7%	**64**	4.5%	8.6%	-	3.6%
30	4.1%	6.3%	8.4%	3.6%	**65**	2.0%	3.9%	-	1.7%
31	9.8%	16.5%	11.6%	8.3%	**66**	5.7%	7.7%	-	5.1%
32	8.2%	14.3%	7.6%	7.0%	**67**	2.2%	6.0%	-	1.7%
33	6.7%	14.2%	-	4.3%	**68**	2.6%	5.3%	-	2.2%
34	5.4%	11.5%	-	4.1%	**69**	2.0%	4.7%	-	1.3%
35	6.9%	10.8%	-	6.0%	**70**	2.7%	5.5%	-	2.0%
						TSP	**SEP**	**ESLP**	**SPP**
					MEAN	7.9%	12.3%	13.1%	6.8%