2016

Undergraduate Student Success

DISCUSSION PAPER SERIES

PROVOST'S ADVISORY COMMITTEE ON INTEGRATED PLANNING

DECEMBER 2016

Preface

A focus of the Academic Plan is "**Everyone deserves access to a great education**" which means, no qualified student will be denied admission to a great education at UOIT due to their socioeconomic background. Together, faculty and staff work hard to educate our students and ensure that they have the tools to realize their career choice. Our ability to enable student success from entry to graduation is key to UOIT's commitment to access. This is not only an important social good but also helps sustainability as noted in the enrolment paper—UOIT will be able to offset the drop in new enrolments driven by provincial population decline. However, in the current situation of operating budget decline, UOIT's strategies for increasing success will need to maximize value for money and effort. The key question underlying this discussion paper is: What should we be doing to enhance student success?

To answer this we must be prepared to answer:

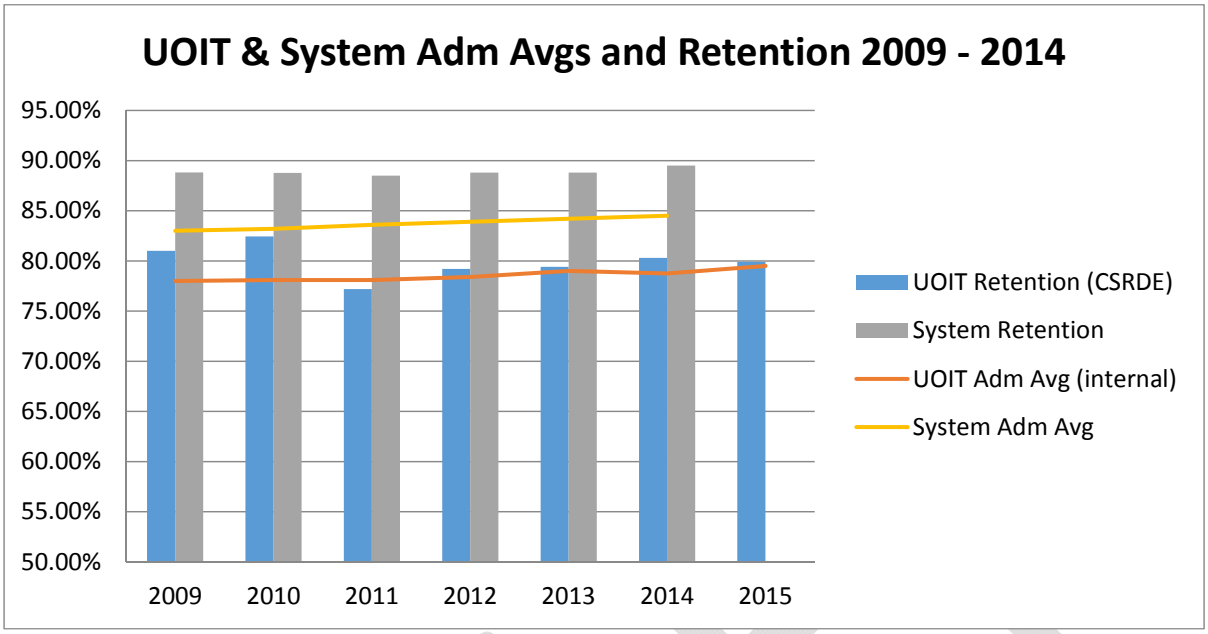
- Which actions work best at the Faculty level, and which are better done across the university?
- Which actions require a different way of doing something that is already resourced, and which require reallocation of resources from another activity?
- How will we know if the action has been successful and worth continuing?

Current Environment

Discussion of retention and student success at UOIT has been ongoing for many years, resulting in a number of reports, including "Student Retention and Success at UOIT". This report detailed UOIT's retention challenges, and highlighted 36 priorities with strategies for implementation. While some of these priorities have been implemented in some units, there is no coordinated effort. Due to the diversity of our programming, we do not anticipate all will be similarly implemented, but the new accountability measures imposed by the provincial government will require us to evaluate these more rigorously.

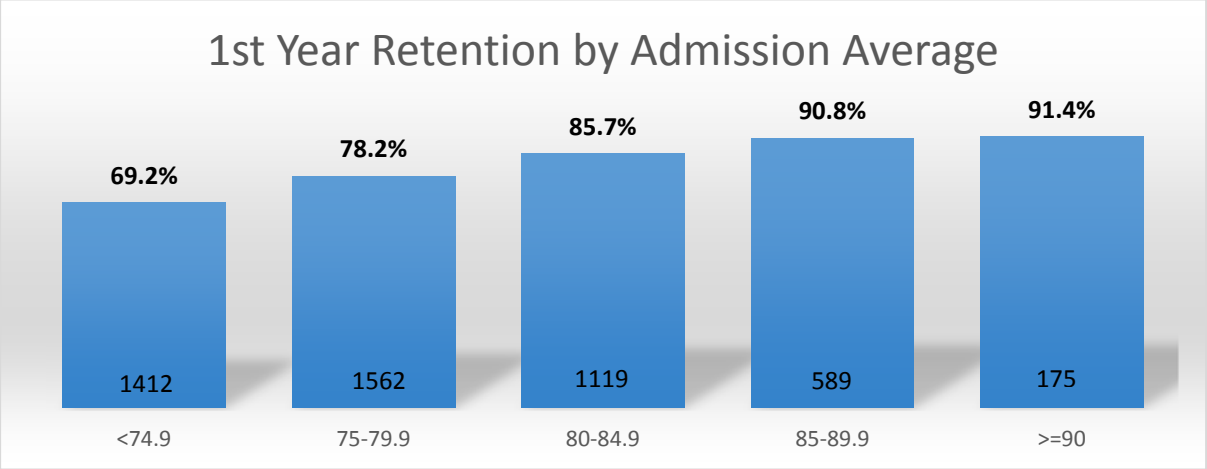
Year one to two retention rates are used by the ministry as a proxy performance measure. UOIT has one of the lowest retention rates in the Ontario university system (Figure 1). In Ontario, the high school admissions averages and 1st year retention rates have increased slightly over the years while UOIT has been more variable.

Figure 1: UOIT and System Admission Averages and 1st Year Retention Rates[1]



Although the data show some irregularities (that may be related to small numbers), the general trend between UOIT admission averages for direct from high school students and the retention rate from year one to two has shown similar patterns. Much like the literature the data suggest a positive relationship between admission average and the likelihood of persistence (Figure 2).

Figure 2: UOIT First Year Retention by Admission Average[2]



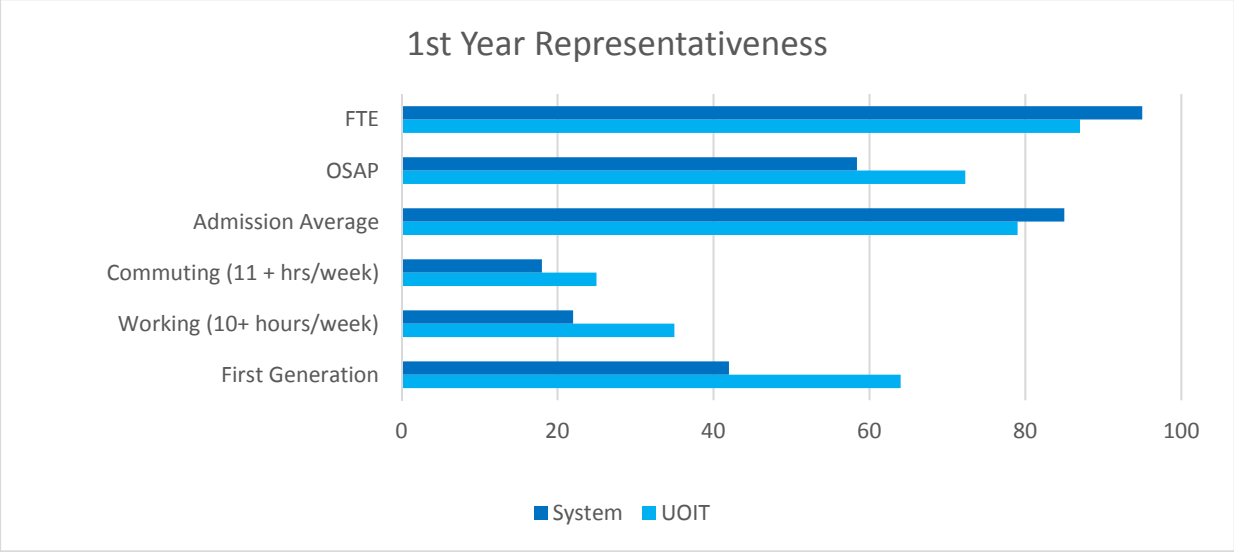
For this reason, an obvious way to improve the persistence rate is to increase the admissions average. However, this goes against the focus of providing **access to a great education**. If we increased our minimum entrance average to 80%, we would lose sustainability as we drop over 60% of the incoming class. Further, many of these students are succeeding regardless of the entering average. In fact – two out of every three students with entering averages less than 80% persist into year two.

[1] Retention Rates from CSRDE (first time, full-time, four-year degree seeking students); Admission Averages provided by COU's annual 'Entering Averages of Registered Secondary School Applicants' publication 2014

[2] Cohorts 2013-2015 represented cumulatively

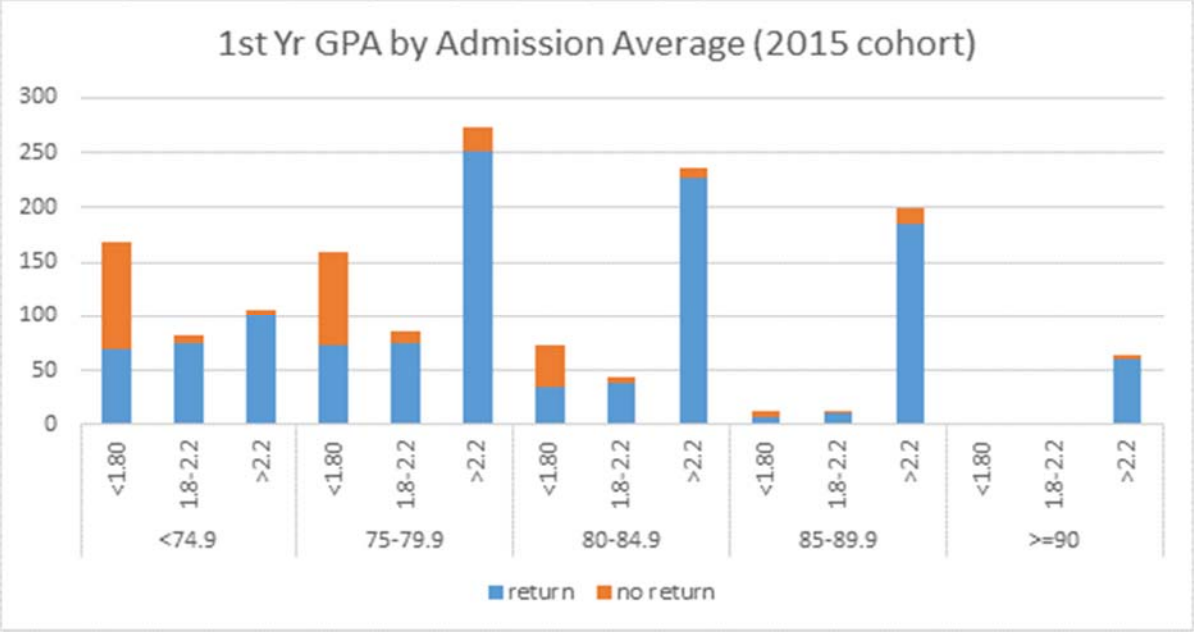
Beyond entrance average, academic success is the result of a complex set of factors, including some particularly relevant to UOIT (Figure 3). These factors, alone or in combination, are known to greatly influence student persistence. Specifically, UOIT has a relatively high proportion of males (CSRDE, 2016) and more students in STEM related programs, populations that tend to have lower success. Thus, our students may be coming to UOIT at a considerable disadvantage.

Figure 3: First Year Student Representativeness[3]



Finally, the "Student Retention and Success at UOIT" report revealed that a large proportion of our students are not succeeding directly as "a result of academic penalties (suspension or dismissal) that are handed down by the University" (Stokes, 2013). Looking again at the retention by admissions average, a considerable number of students fail to achieve clear academic standing (>2.0) after first year.

Figure 4: First Year GPA by Admission Average



[3] OSAP 2015/16 MAESD, Admission Average Fall 2014 OUAC, Commuting, Working and First Generation NSSE 2014

First year retention rates are one measure of success; however, a better standard of success may be the student who graduates. The Ministry of Advanced Education and Skilled Development (MAESD) measures the number of students who have graduated seven years after entry. For UOIT, we see that the relation between admission averages and graduation follow a similar trend line as retention.

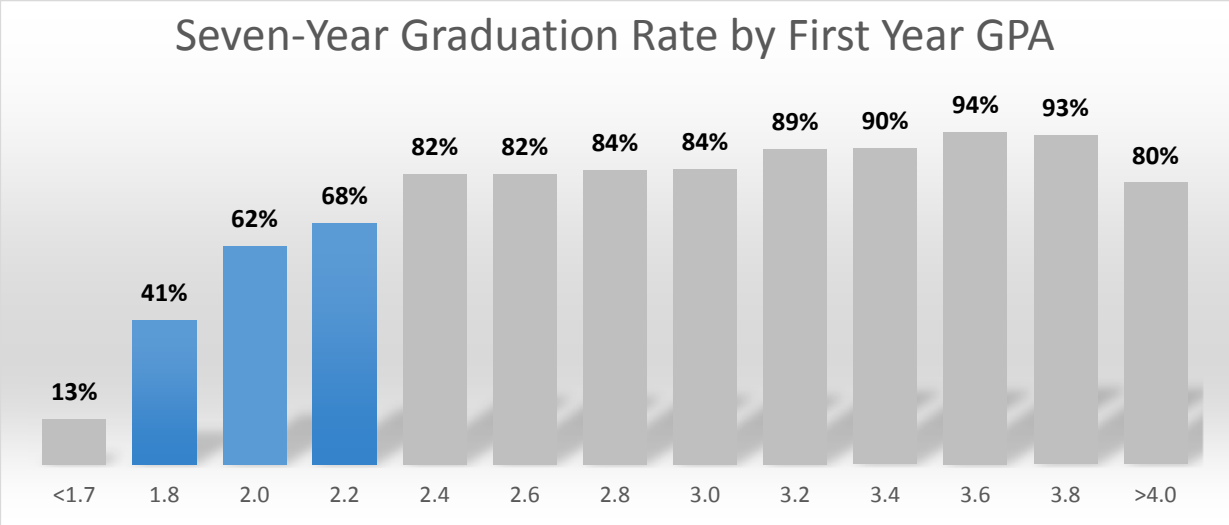
Looking at the five years between 2004 and 2008, (Table 1) there are a couple of elements to consider when we review the difference between first year retention rates and graduation rates. We see that UOIT is 4.2% below the system in first year students retained, and 8.9% below the system graduation rate; therefore, it is obvious that retention issues stretch beyond just year one attrition. The difference between these two rates is progressing favorably over the three years leading up to the 2008 cohort.

Table 1: UOIT's 1st Year Retention and 7 Year Graduation Rate[4]

	Retained [R]		***Graduated [G]***		***Difference [R-G]***		***Diff***
	UOIT	System	UOIT	System	UOIT	System	
2004	88.1%	89.2%	68.2%	74.9%	19.9%	14.3%	-5.6%
2005	84.8%	88.7%	65.3%	74.1%	19.5%	14.6%	-4.9%
2006	86.4%	88.4%	65.2%	74.5%	21.2%	13.9%	-7.3%
2007	80.2%	88.2%	63.2%	74.9%	17.0%	13.3%	-3.7%
2008	82.7%	88.3%	66.7%	74.6%	16.0%	13.7%	-2.3%
Average	84.4%	88.6%	65.7%	74.6%	18.7%	14.0%	-4.8%

Unsurprisingly, early academic performance is a reliable indicator of ultimate graduation outcome. Because of the potential ambiguity in graduation outcome, the Educational Advisory Board (EAB, 2015) refers to the entire population of mid-range GPA students as "The Murky Middle." EAB research shows that students in the murky middle who gain two-tenths of GPA increase graduation rates by 16%. Thus, an investment in supports for this population of students may represent a potential and significant improvement in persistence. Figure 6 shows UOIT's data for those students. Note the substantially lower graduation rates for those students in the "murky middle" or 1.8 to 2.2 first year GPA (figure 5). These 'at-risk' students may represent a significant opportunity for UOIT to improve its graduation rate.

Figure 5: UOIT's Murky Middle



[4] 1st year retention & 7-year graduation rate represents 2004 – 2008 cohorts (students who graduated within 7 years from the start of their program), CSRDE methodology

Once a student is identified as 'at risk', we must examine what supports are in place and whether or not these students access these supports. For instance, Student Life offers a variety of workshops, study sessions and one-on-one appointments with peer tutors and academic specialists. Recently, an internal study was done on the "Correlation between Physics and Calculus Workshops Attendance and University Grades", which found that students who attended subject related workshops were more likely to achieve success in year one physics and calculus courses than the students who did not. Currently, 28-45% of students enrolled in these courses attend the workshops; however, among the low performing students (i.e., those who began their studies in Math and Physics academically underprepared (<70% correlating Math or Physics admission grade) only 25% attended these workshops. This suggests that there is still room to encourage broader participation among students in these workshops. Nevertheless, we also know that many UOIT students only connect with the University inside the classroom, particularly those who commute to campus, work, and care for dependents, suggesting that strategies for success and/or supports are also needed *within* the classroom.

STUDENT RETENTION INITIATIVES - DISCUSSION

Retention issues can emanate from a myriad of factors that are either within or outside the control of the institution (Swail, 2004). Although UOIT cannot realistically manage a student's socioeconomic status, mental health, dependent care, length of commute, etc., we can invest in and establish supports to help students with these needs succeed in their studies. Providing access to great education, and in turn improving student retention, is <u>everyone's responsibility</u>.

How does UOIT support positive change in and outside of the classroom that will directly contribute to the retention of our students? As noted above, two thirds of those entering with under 80% average succeed into year two. Without tools to track attendance or mandatory early grade submissions within the first month of classes, it is difficult to identify those in need until after the first semester. For most students, this is too late as these students have potentially lost a semester and feel defeated, which can lead to a multitude of issues. Although a manual version of an early alert system has been adopted within each of the faculties, there is no consistency in its application. Furthermore, the process is manual and requires substantial time and resources of both academic advisors and instructors.

- How do we engage faculty, staff and students in this process? How does UOIT increase student participation in academic supports while also enhancing in-class supports for the academically underprepared?

ACT Inc. (formerly known as the American College Test) has researched and reported on factors that lead to student attrition, with a primary emphasis on discovering effective retention practices. In their book, Increasing Persistence, Habley, Bloom and Robbins (2012)[5] reviewed which practices had a positive impact on student retention. They grouped interventions into three categories: learning support informed by assessment, first-year transition programs, and academic advising (p228).

Learning Support (Prepare those underprepared)

Habely et al. (2010)[6] note that academic preparation for university is consistently the leading cause of student attrition. Furthermore, they "rated placement tests and mandatory placement of students into developmental/remedial courses in the top five interventions contributing to retention." It is usually assumed that the K-12 system is responsible for university academic preparedness. However, UOIT has

[5] Habley, W.R, Bloom, J.L., Robbins, S., Increasing Student Persistence: Research Based Strategies for College Student Success, Jossey-Bass (2012)

[6] Habley, W.R, McClanahan, Valiga, & Burkum, What Works in Student Retention (2010)

assumed the obligation to support those students who are admitted with gaps in their academic foundation. That is, admitted students do meet the criteria for entrance, although they may not be prepared in particular subject areas. Mandatory academic assessments to determine prerequisite knowledge in a particular subject and deliberate interventions to bridge the gap between students' existing skills and the skills are needed. "To do this effectively requires that the university develop a valid and reliable approach to assessing those gaps and placing students in appropriate courses where instruction and learning support can focus on the reduction of those gaps" (Habley et al, 2012).

RECOMMENDATION 1 – introduce diagnostic testing starting with math related courses

UOIT currently provides learner supports through various mediums. Student Life provides workshops, peer assisted study sessions, peer tutoring, one-on-one support through academic specialists, and specialized programming in math, physics, engineering, writing, and study skills. Individual Faculties provide learning support through their teaching assistants, though to what extent is unknown at this time. In addition to these supports, a new retention initiative has been implemented to remediate students who would otherwise be suspended by enrolling them in Durham College's general arts and science program. The student is then re-admitted to UOIT upon successful completion of the program. These supports are voluntary and pursued at the student's discretion after the first year of study at the university. Research suggests that successful programs require a great connection between faculty members and support centers.

RECOMMENDATION 2 – look at the percentage of full-time faculty instructing required first year courses and ensure a link is made with learning strategist in student life to set out the appropriate supports and times.

First-year transition programs

First-year transition programs have been developed to help new students assimilate to campus life, which would hopefully lead to student satisfaction, retention and ultimately graduation (Habley et al, 2012). UOIT's Student Life currently offers a variety of first year transition programs, including September Orientation, iBegin, Smart Start and the Peer Mentorship program. In addition, transition programs are offered to selected student populations including indigenous, first-generation, international, mature and transfer students, and students with disabilities. These programs provide students with practical study skills for academic success, personal development and community engagement. Such programming is critical to enhance student engagement, which improves persistence. At UOIT, participation in these programs is relatively high at approximately 50% of the incoming cohort; nevertheless, new efforts are underway to provide all new students with a cohesive first year experience through broader collaboration between all faculties and units involved in first year transition programming.

RECOMMENDATION 3 – continue to have student life and faculty work on the most appropriate transition programs realizing these are much more than a two-day orientation.

RECMMENDATION 4 - A senior member from the faculty should visit with first year cohort again after first assignment to remind them of the trials of the transition and where they can find supports.

Academic Advising

There is a positive correlation between academic advising and student persistence (Pascarella & Terenzini, 2005).[7],[8] Thus, academic advising is a significant influence in student success. It is important to note that the authors are referring to faculty members as advisors – not just the academic and specialized advisors that UOIT has in the Faculties and student support areas. From the 2010 WWISR Survey (Habley et al., 2010) the top five advising-related practices (in order of impact) are: training for faculty and non-faculty advisors, advising interventions with selected student populations, increased number of advisors, and an academic advising center.

Although academic advisors are critical in any institution's student retention strategy, classroom contact also plays an important role in identifying at-risk students. Assuming the average student takes a 15-credit-hour course load over the course of a 12-week semester, they spend a minimum 180 hours with each instructor each term. Compare that to the one or two hours per year that students may spend in an optional formal advising appointment each term. Instructors have access to two powerful predictors of student success: classroom attendance and early assignment and/or test grades. The ability for an early warning system to help identify the 'murky middle' students has the potential to make a difference in a student's academic career. For an early warning system to succeed, we would need the whole institution to embrace it; we would also explicitly need to recognize the role of faculty as one of the key suppliers of information. However, these expectations may be perceived as additional responsibility on top of the myriad of duties that faculty currently perform.

RECOMMENDATION 5 – enhance faculty specific early warning programs by requiring a grade entered in first year classes within first 15 days

RECOMMENDATION 6 – develop a training program for administrative and faculty advisors to focus on proactive engagement and group based scenarios.

[7] Pacarella, Terenzini, (2005)

[8] Habley, W.R, Bloom, J.L., Robbins, S., Increasing Student Persistence: Research Based Strategies for College Student Success, Jossey-Bass (2012, p.291)

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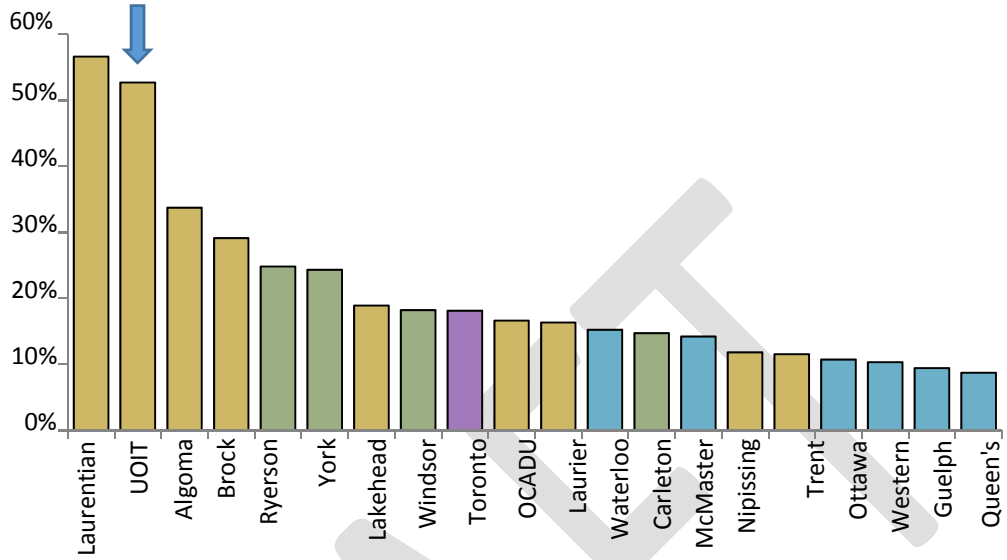
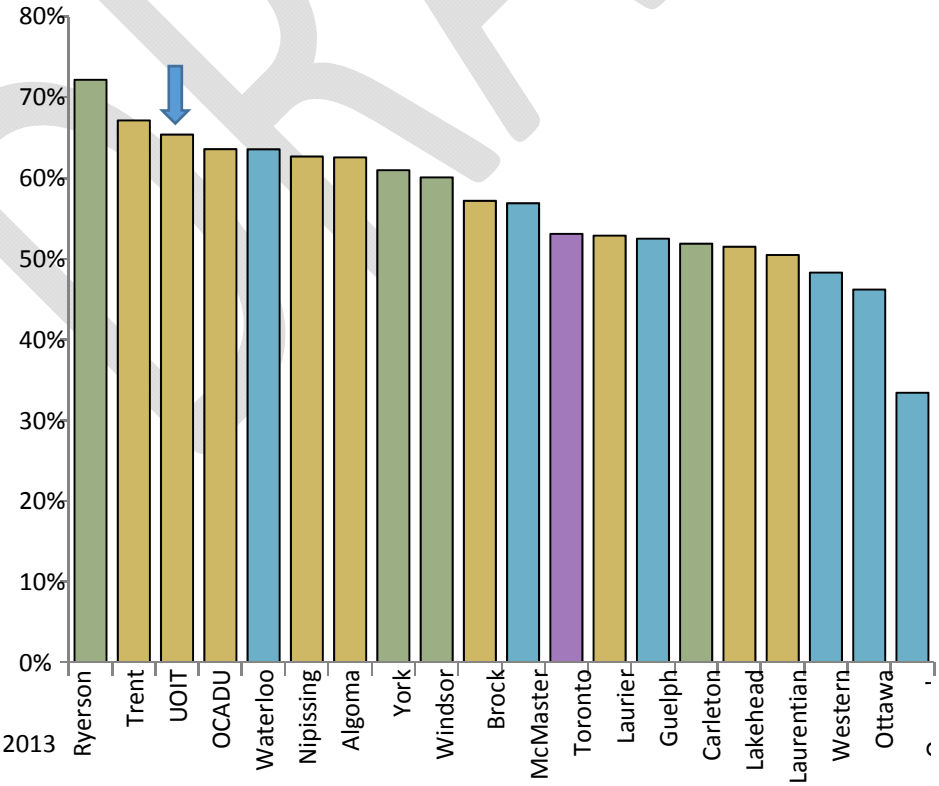
Appendix A – Socioeconomic populations

Percentage of Students who are First-Generation Students



Source: Institutional Multi-Year Accountability Agreements (MYAAs), 2013

OSAP Participation Rate



Source: MTCU, 2013

Appendix B Fall to Fall CSRDE Retention

Program	2013 Intake	2013 Return +1YR	2013 Return +2YR	2014 Intake	2014 Return +1YR	2014 Return +2YR	2015 Intake	2015 Return +1YR
Business	264	79.5%	70.3%	259	78.0%	70.3%	226	73.0%
Networking & IT Security	58	74.1%	63.8%	64	51.6%	45.3%	60	76.7%
Game Development	63	85.7%	55.6%	79	68.4%	44.3%	79	78.5%
	385	**79.5%**	**66.8%**	**402**	**71.9%**	**61.2%**	**365**	**74.8%**
Health Physics & Radiation Sci	5	100.0%	100.0%	3	33.3%	33.3%	5	20.0%
Nuclear Engineering	75	81.3%	74.7%	55	90.9%	85.5%	47	85.1%
	100	**84.0%**	**78.0%**	**58**	**87.9%**	**82.8%**	**52**	**78.8%**
Automotive Engineering	55	74.5%	65.5%	61	83.6%	68.9%	47	87.2%
Electrical Engineering	70	80.0%	77.1%	92	81.5%	73.9%	78	84.6%
Manufacturing Engineering	15	73.3%	53.3%	17	82.4%	70.6%	3	66.7%
Mechanical Engineering	149	83.2%	71.8%	162	84.6%	73.5%	178	81.5%
Software Engineering	41	90.2%	70.7%	47	80.9%	74.5%	73	87.7%
	330	**81.5%**	**70.9%**	**379**	**83.1%**	**72.8%**	**379**	**83.9%**
Health Sciences	83	89.2%	84.3%	80	78.8%	78.8%	102	77.5%
Medical Laboratory Science	22	95.5%	81.8%	36	91.7%	86.1%	27	100.0%
Nursing (Collaborative)	61	90.2%	86.9%	64	98.4%	93.8%	57	100.0%
Kinesiology	84	86.9%	77.4%	96	90.6%	81.3%	94	80.9%
	250	**89.2%**	**82.4%**	**276**	**89.1%**	**84.1%**	**280**	**85.4%**
Applied and Industrial Math	11	90.9%	45.5%	6	83.3%	66.7%	5	80.0%
Biological Science	124	79.8%	63.7%	110	73.6%	63.6%	70	78.6%
Chemistry	54	70.4%	51.9%	50	86.0%	74.0%	34	79.4%
Computing Science	51	56.9%	56.9%	40	75.0%	57.5%	48	79.2%
Forensic Science	53	73.6%	64.2%	53	73.6%	75.5%	50	76.0%
Physics	13	76.9%	69.2%	13	76.9%	61.5%	30	33.3%
	308	**73.7%**	**60.4%**	**272**	**76.5%**	**66.9%**	**237**	**72.6%**
Communication	24	79.2%	75.0%	26	76.9%	61.5%	17	88.2%
Criminology and Justice	188	72.9%	67.6%	148	79.1%	70.3%	116	81.9%
Legal Studies	30	73.3%	63.3%	25	92.0%	80.0%	20	90.0%
Forensic Psychology	78	74.4%	52.6%	68	85.3%	76.5%	69	82.6%
Community Dev & Policy	7	57.1%	42.9%	5	100.0%	80.0%	2	0.0%
	327	**73.4%**	**63.6%**	**272**	**82.0%**	**72.1%**	**224**	**82.6%**
	1700	**79.4%**	**68.8%**	**1659**	**80.3%**	**71.1%**	**1537**	**79.9%**

Student Success

Strategy & Planning

January, 2017

Purpose

- Define our student success goal

- Highlight what we are planning to do to enhance success
  - Future discussion on how we will coordinate/ track these efforts

Portrait of a UOIT Student

- Between 17-23 years old/ males outnumber females
- High likelihood of being a first gen student
- More likely to commute than live in residence
- Working part time & likely receiving financial aid
- STEM focused
  - Based on averages - entering underprepared

SO …. We need to provide instruction and supports different than other institutions

Student Success Goal

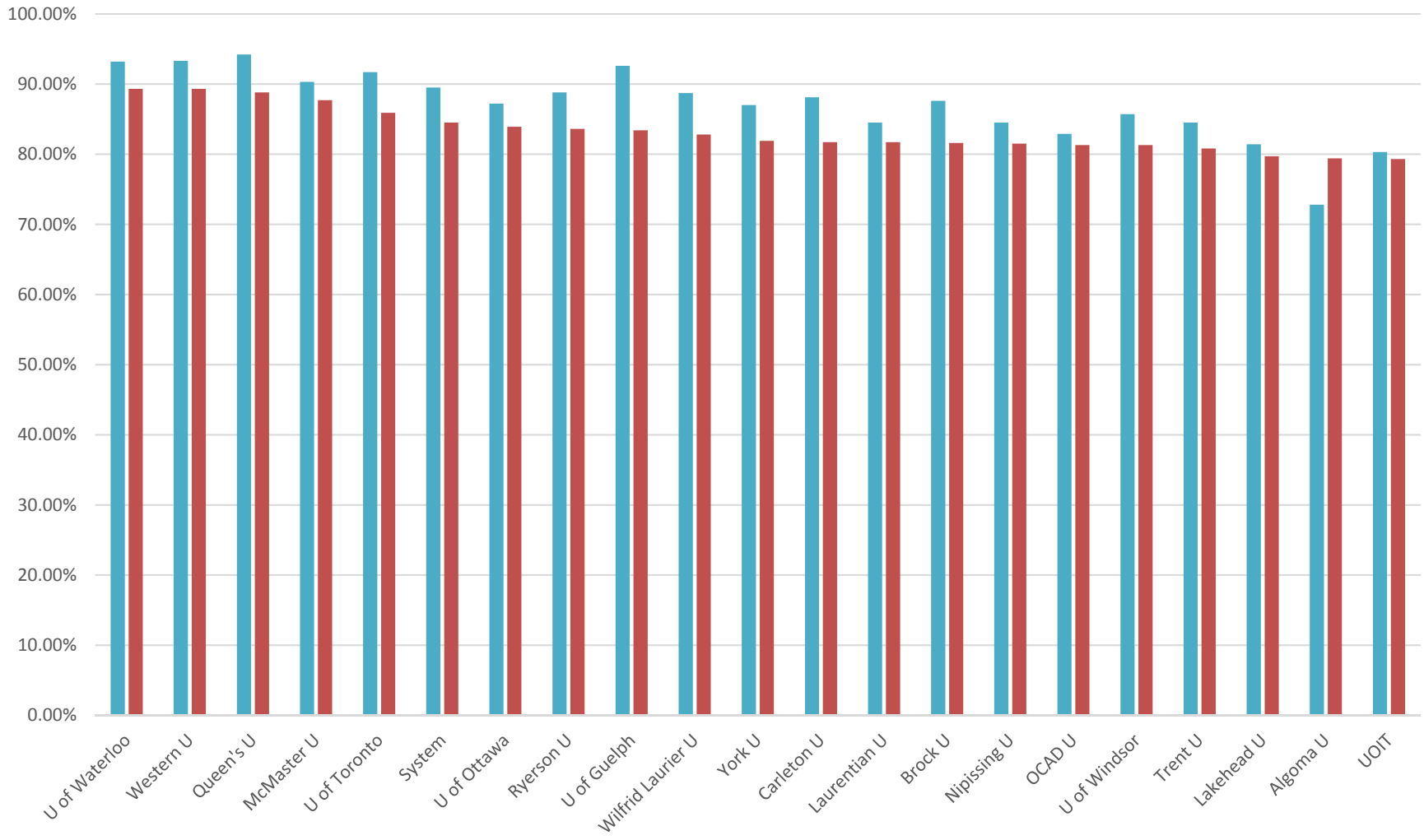
- In the 2012-2016 Strategic plan we had a target of a 3% increase
  - Achieved! (growth from ~77% to 80%)

- What is the right target for the 2017 plan?
  - overarching principle: we are here to provide access to a great education
  - This is not just a first year issue but we will focus there right now

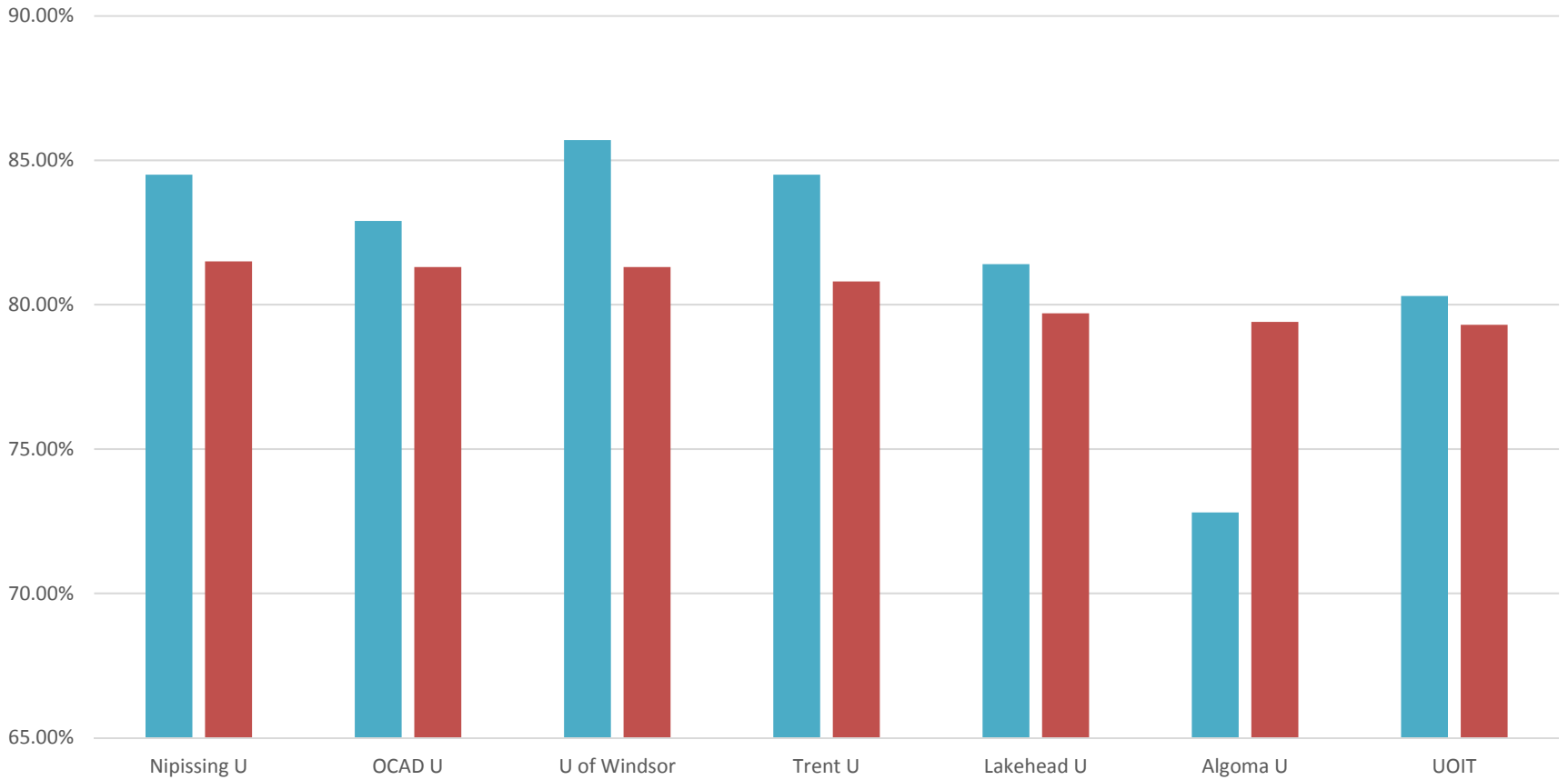
UOIT & System Retention and Admission Averages

2014 CSRDE & OUAC

Admission Avg (red) & 1st yr Retention (blue)



Admission Avg (red) & 1st yr Retention (blue)



Not looking for system average of ~90
Admission comparables provide target of ~82

Recommendations/ Initiatives

- Introduce diagnostic testing
- 1st year courses taught by FT & ensure link with learning strategist in student life
- Enhance transition programs
- Re-orient after first grade (~ 3 weeks in)
- Early warning system
- Training for administrative and faculty advisors

UNIVERSITY OF ONTARIO INSTITUTE OF TECHNOLOGY

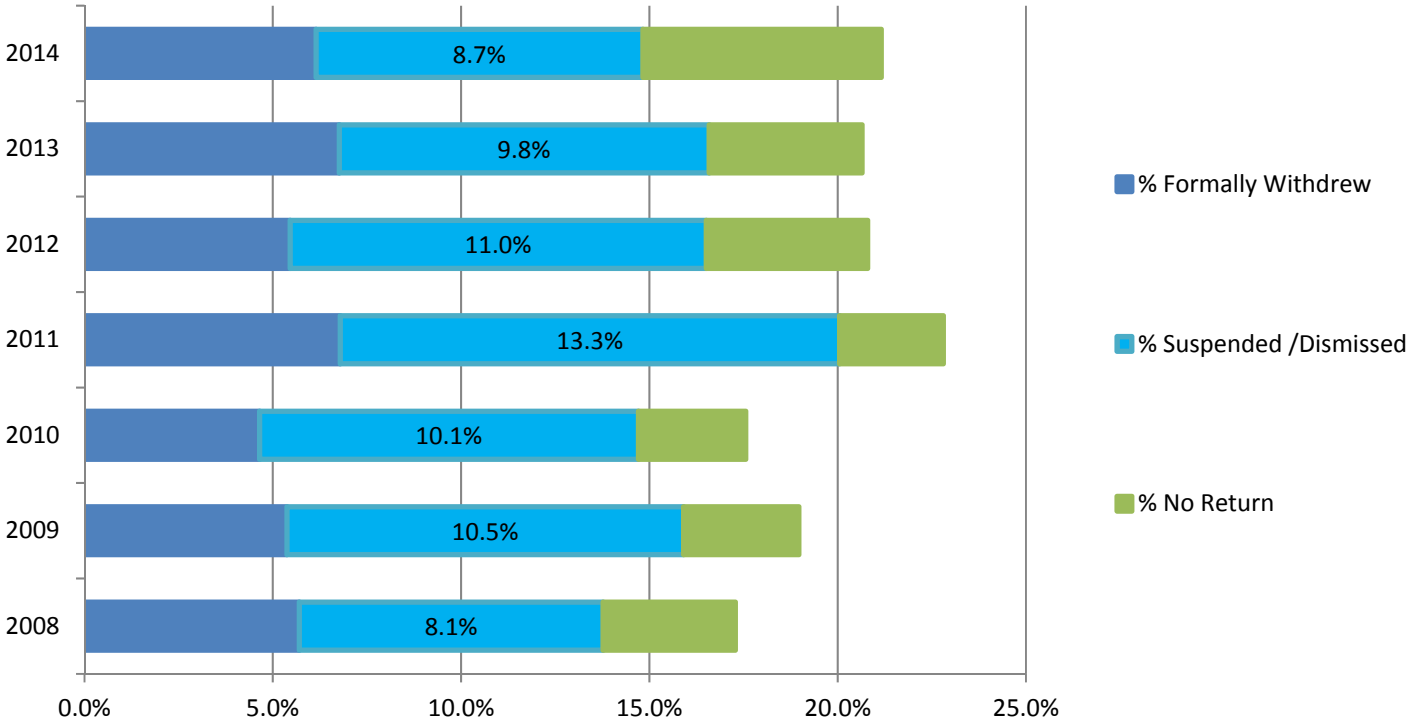
Appendix

Student Demographics

	UOIT	Ontario
Female	41	56
Full-time	95	88
International	5	7
On-campus*	23	43
Less than 24*	89	94
First-generation	52	42
Working*	53	19
Commuting (11 plus hours/week)*	25	18
Care for dependents*	42	31
Aboriginal*	3	3

*2014 NSSE

1st Year Leavers as a % of Enrolment



2014 CSRDE

Faculty Retention Initiatives

- Academic Support through Advising
- TA support for courses
- Retention course offerings
- Faculty specific student clubs
- Faculty social events: awards dinners, lunch and learn sessions, honour roll luncheons
- Financial support through employment (TA, RA, work study), Faculty monetary awards
- Early alert programs

Institutional Retention Initiatives

- Increased academic support in writing, math, engineering, physics, study skills and career development:
  - Drop-ins and workshops
  - Individual tutoring
  - Online resources
- Expanded peer learning support:
  - Peer assisted study sessions (PASS)
  - Peer mentoring
  - Peer tutoring
  - Peer employment advising
  - Student ambassador/leadership programming

Institutional Retention Initiatives

- Specialized student support:
  - Financial aid and student awards
  - International students
  - Indigenous students
  - First generation students
  - Mature, transfer and graduate students
  - Students with learning/physical disabilities, and mental health concerns
- Improved social environment for students:
  - Outreach services (pride and LGBTQ centre, sexual health resources, food bank)
  - Study spaces
  - Food services and residences

Institutional Retention Initiatives

- Additional pre-university academic preparation opportunities:
  - Summer boot camps in math, business math, physics, reading/writing and study skills
  - Online resources
- Coordinated transition programming for students:
  - Orientation (in person, online)
  - First year experience programming (ONE, IBegin, SAS summer transition)
- Enhanced student engagement opportunities:
  - Co-curricular events
  - Internships and coops
  - Student government, clubs and societies
  - Intramural programming and recreational facilities
  - Fan engagement
  - Volunteer activities
  - On-campus employment