Policies to Improve Undergraduate Education in Ontario

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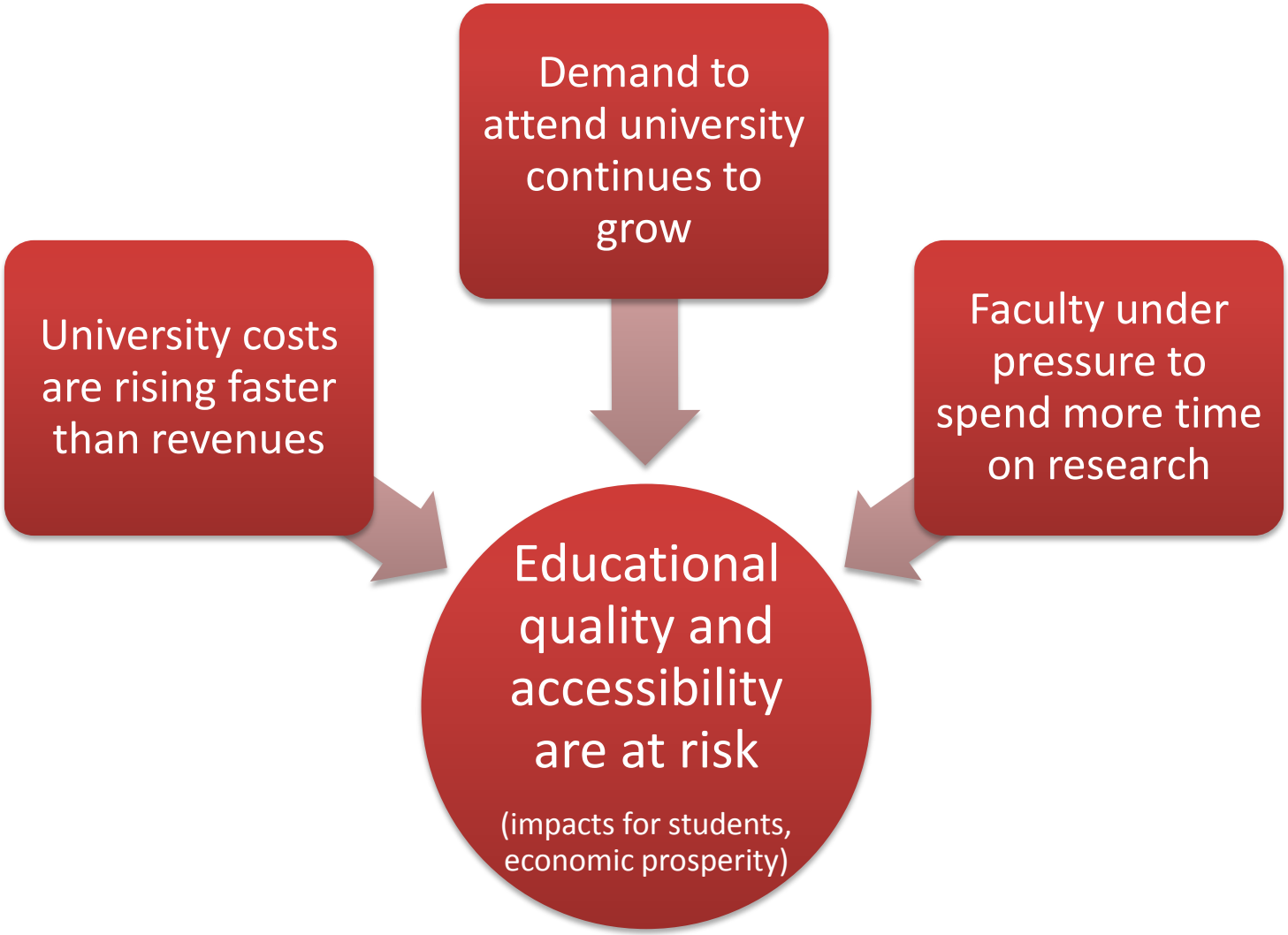
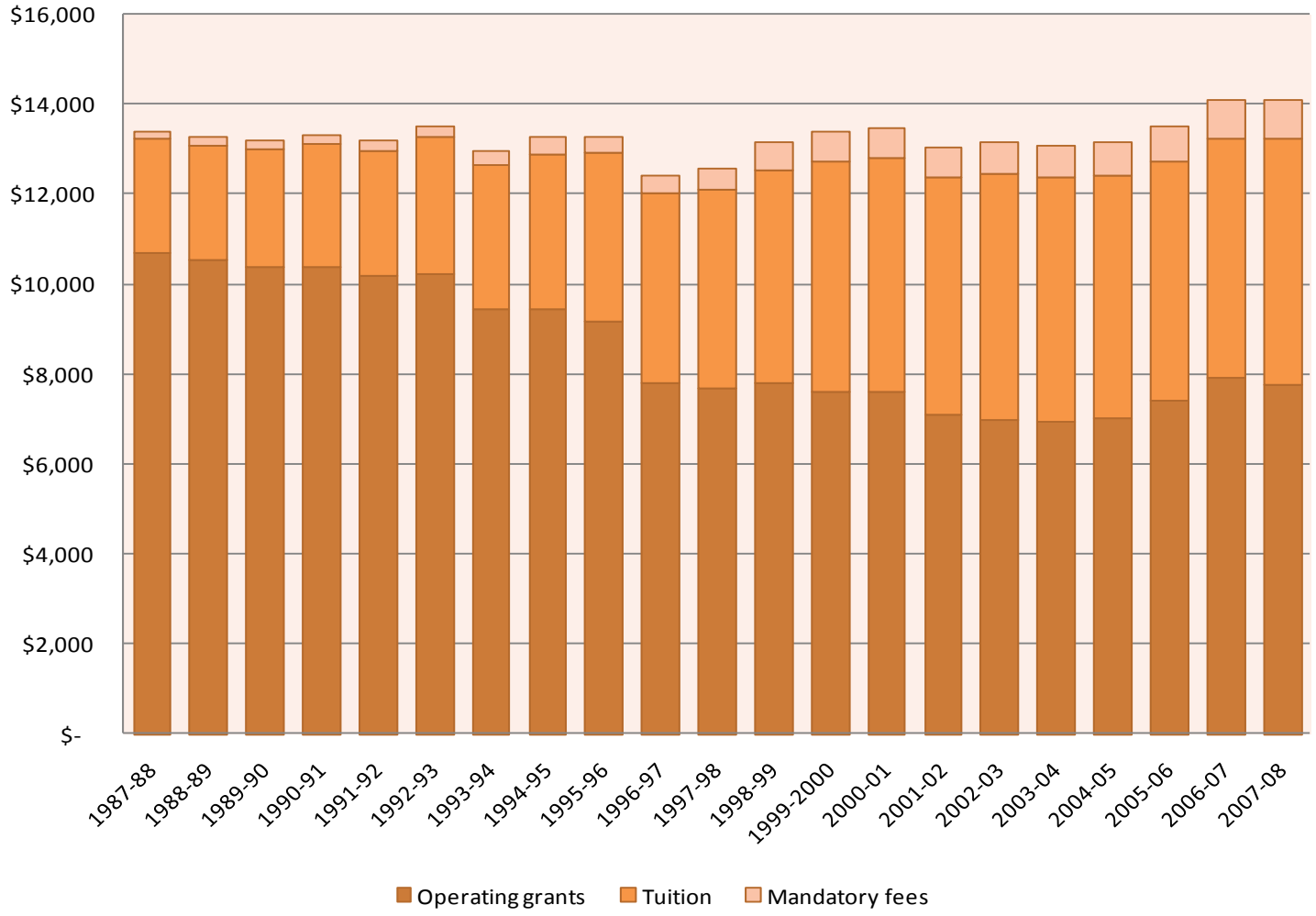
Thursday, November 10, 2011

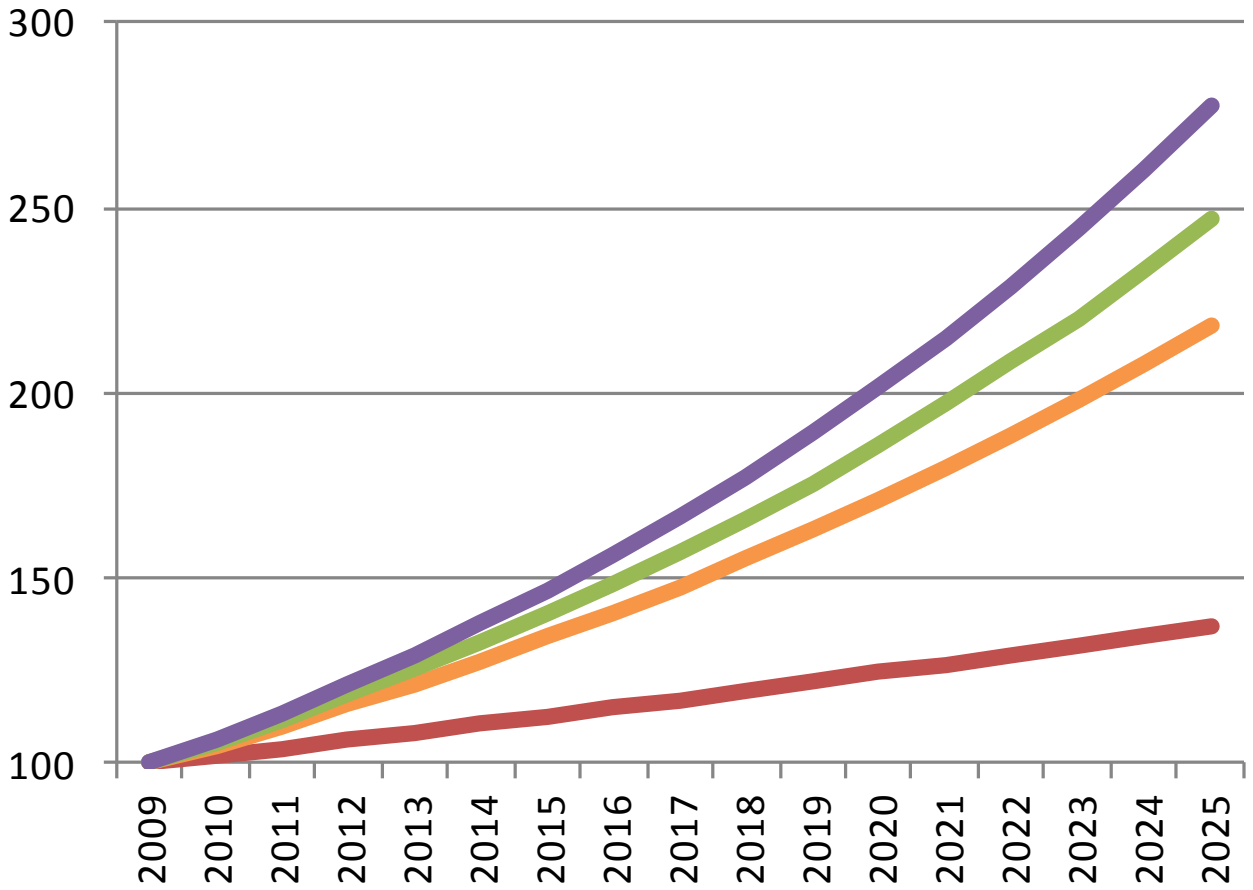
The Problem in Brief



Universities: Total operating revenue from MTCU operating grants, tuition and mandatory fees, per FTE student, 1987-88 to 2007-08 (constant 2007 dollars)



Impact of University Inflation and Higher Enrolments on Operating Costs



University inflation
+ enrolment growth
(low and high scenarios)

University inflation (~5%)

CPI inflation (2%)

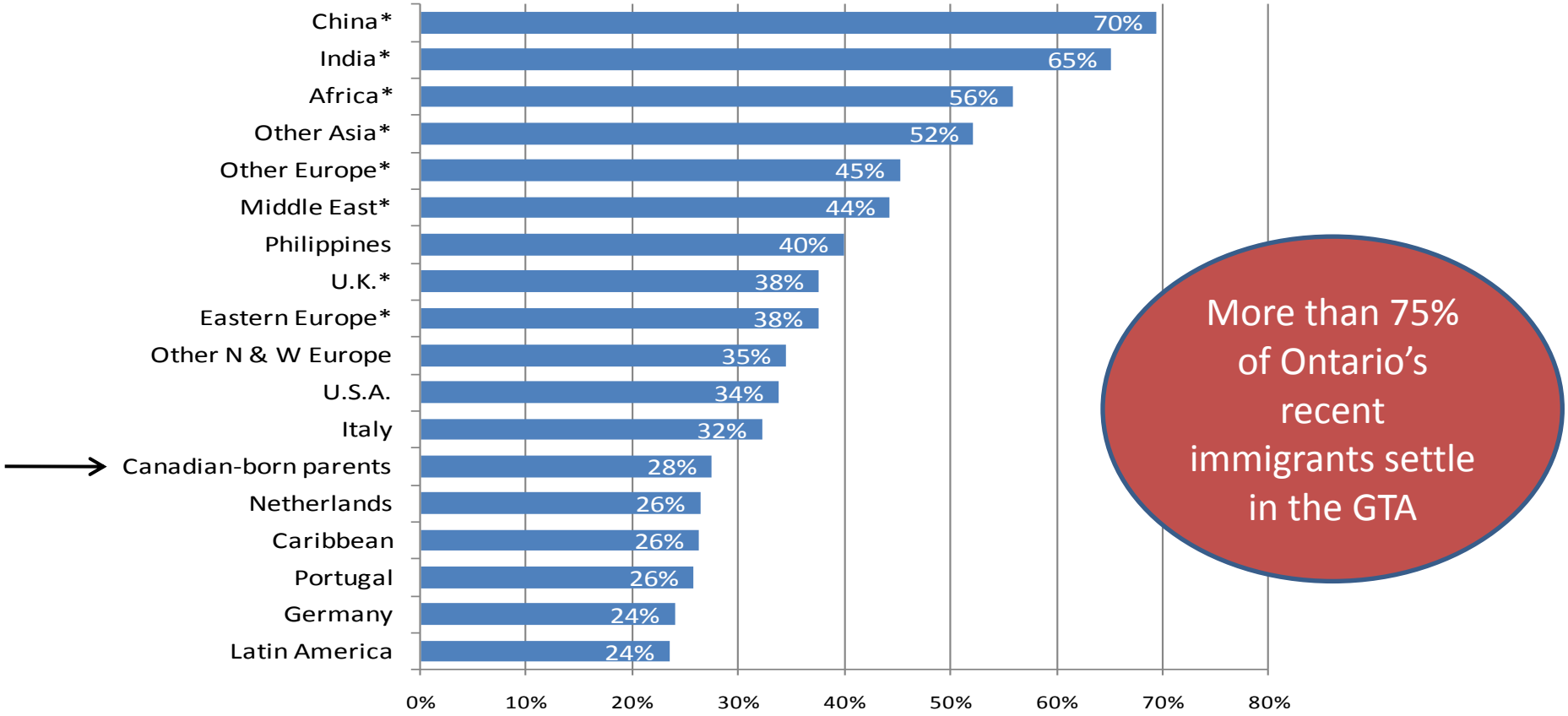
Student demand for baccalaureate education

Growth in student demand for baccalaureate education, 2009 to 2025 (FTEs)			
If students' geographic preferences do not change....		*If more GTA students want to attend university in the GTA...*	
GTA	**Rest of Ontario**	**GTA**	**Rest of Ontario**
30,000 – 51,000 (22-37 percent)	20,000 – 53,000 (8-21 percent)	51,000-74,000 (37 – 55 percent)	0 – 30,000 (0-12 percent)

- Projection based on the continuing rise in participation rates
  - Low scenario assumes participation rates grow at *half* the rate of the past decade
  - High scenario assumes participation rates grow at the *same* rate as the past decade
- At present 44 per cent of university-bound GTA secondary school students go to a university outside the GTA

Immigration and demand to attend university

University attainment among children of immigrants



*Difference from children of Canadian-born parents is statistically significant.
Includes Canadian-born children age 25-34 who have at least one foreign-born parent or who immigrated to Canada before age 13.
SOURCE: T. Abada, F.Hou and B. Ram, Group Differences in Educational Attainment Among the Children of Immigrants by (Statistics Canada, 2008)

University funding formula encourages all universities to pursue research, graduate studies

MTCU operating grant per student for selected university programs, 2009-10		
Funding Weight	**Programs (examples)**	**Grant per FTE student**
1	1st year Arts and Science General Arts and Science	$3,100
1.5	Upper-year Honours Arts Commerce Fine Arts Law	$5,800
2	Applied Science and Engineering Architecture	$8,300
2	Upper-year Hons Science Education Nursing Pharmacy Master of Bus. Adm.	$8,500
3	Master of Arts	$12,700
4	Master of Science	$18,200
5	Medicine, Dentistry	$24,200
6	Doctoral	$29,100

...and note that

- All universities pursue federal and provincial research funds (CFI, CRCs, granting councils)
- There is no comparable incentive to pursue excellence in undergraduate teaching

The “enduring myth”

…that teaching effectiveness needs research productivity

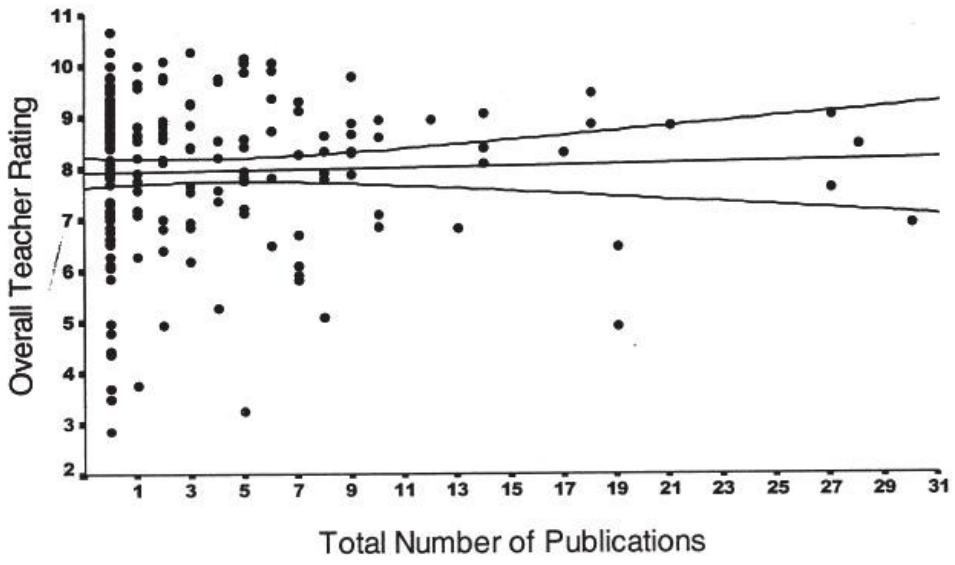


FIG. 1. Teaching-Research Relation. Scatter Plot Showing the Size of the Relation ($r = 0.03$), the Best Fit Regression Line, and the 95% Confidence Interval.

Conclusion

…need to focus on each, but almost independently

Herbert W. Marsh
John Hattie

The Relation Between Research Productivity and Teaching Effectiveness

Complementary, Antagonistic, or Independent Constructs?

The major responsibilities of academics in the modern university are teaching and research as well as, to lesser extents, administration and community service. Indeed, some (Crittenden, 1997) consider that one of the defining characteristics of a university is that all academics are expected to be active researchers and active teachers (while noting the rationale for teachers who are not expected to pursue research in non-University tertiary institutions). Senior academics often contend that this mutually reinforcing, symbiotic relation between teaching and research is what distinguished universities from other research and educational institutions (Neumann, 1992). Conventional wisdom—typically not based on empirical research—is that teaching and research are mutually supporting if not inseparable (Webster, 1986). Ideally, teaching effectiveness and research productivity are complementary. Much of the rationale for the existence of research universities is that these two activities are so mutually reinforcing that they must coexist in the same institutions. Marsh (1987), Hattie and Marsh (1996), Braxton (1996), and others, however, argue that plausible arguments can be made as to why teaching and research activities should be complementary, conflicting, or unrelated to each other.

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How students are affected

Larger class sizes	• Most students are at a university where more than 30% of first-year classes offered have 100+ students
More part-time faculty	• Part-timers teach more than half the classes in some large faculties
Shorter semesters	• Some universities moving from 13 weeks to 12 (vs. 15 weeks in US)
Impact on student learning?	• We don't directly measure student learning on a system-wide basis (unlike K-12 system)

What Ontario Might Do: System plan

- Develop and publish a higher education demand projection from 2012 to 2025 by region. This plan should include, for each region in the province:
  a. demand for undergraduate spaces
  b. demand for spaces in the Colleges of Applied Arts and Technology, and
  c. demand for graduate and professional spaces.

Options for accommodating baccalaureate enrolment growth

- Create up to 5 new teaching-oriented universities
- Introduce a 2-year credential at colleges that prepares students to enter 3rd-year of university
- Encourage high-quality 3-year baccalaureates

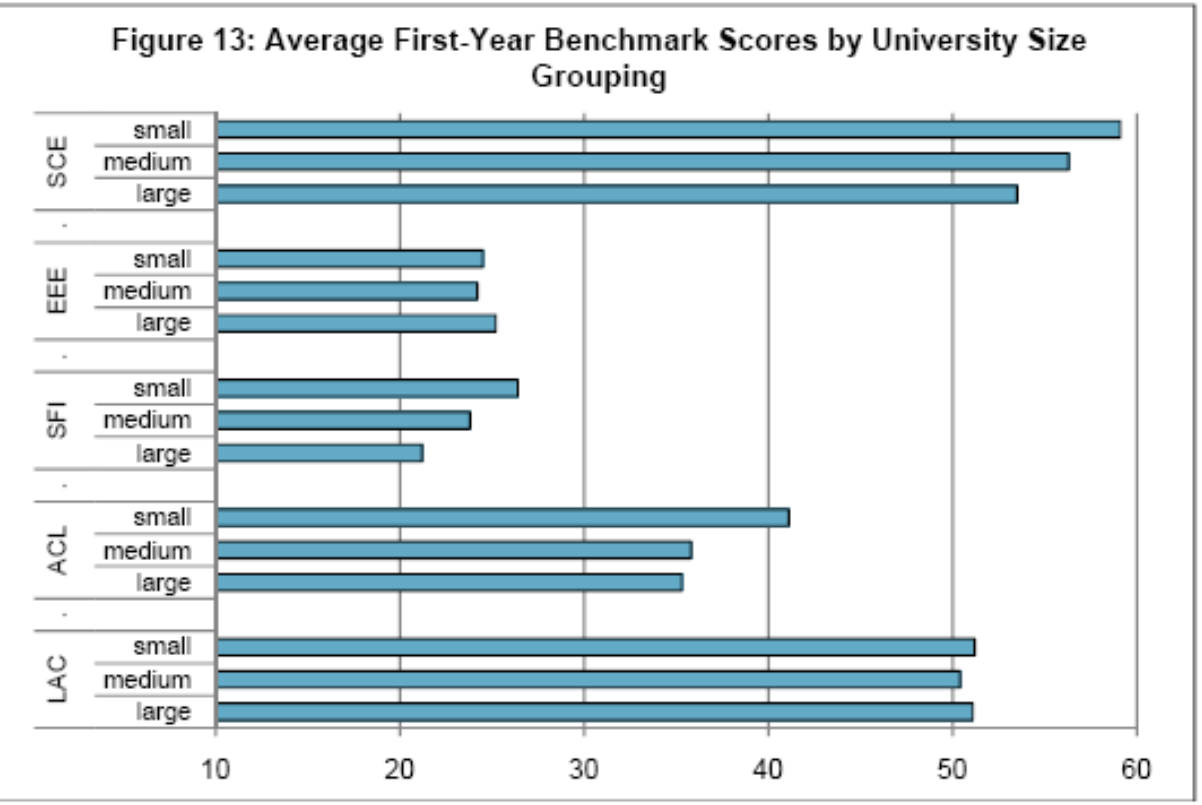
Toronto has two of North America's largest campuses

Largest public university campuses in USA and Canada, Fall 2010

Rank	University	Location	Enrollment (headcount)
1	Université de Montréal*	Montréal, Québec	58,445
2	Arizona State University	Tempe, Arizona	58,371
3	University of Central Florida**	Orlando, Florida	56,235
4	Ohio State University	Columbus, Ohio	56,064
5	York University – Keele campus***	Toronto, Ontario	55,049
6	University of Toronto – St. George campus	Toronto, Ontario	54,701
7	University of Minnesota	Minneapolis/Saint Paul, MN	51,721
8	University of Texas at Austin**	Austin, Texas	51,195
9	University of Florida**	Gainesville, Florida	49,827
10	Texas A&M University**	College Station, Texas	49,129
11	University of South Florida**	Tampa, Florida	47,576
12	Michigan State University	East Lansing, Michigan	47,131
13	Univ. of British Columbia – Vancouver campus	Vancouver, BC	47,095
14	Pennsylvania State University	University Park, PA	44,832

* Includes Hautes études commerciales and École polytechnique. ** Includes students enrolled in relatively small regional campuses.
*** Includes 4,553 Seneca College students.

Students at small universities tend to be more engaged in their own learning



Source: Conway, C., Zhao, H., & Montgomery, S. (2011). *The NSSE National Data Project Report.* Higher Education Quality Council of Ontario.

- Small institutions experience higher average scores for
  - Supportive Campus Environment (SCE)
  - Student-Faculty Interaction (SFI)
  - Active and Collaborative Learning (ACL)
- No difference for
  - Level of Academic Challenge (LAC)
  - Enriching Educational Experiences (EEE)
- "Highly similar results hold for senior-year students."

The financial case for teaching-oriented universities

- Premise: Average teaching load for full-time faculty is 4+4 at teaching-oriented universities
  - The most common load at traditional universities is 2+2
  - Classes are held 26 weeks/year
- With the same per-student revenue as a traditional university, the teaching-oriented university can offer
  - Smaller classes
  - Lower costs (for government and/or students)

The financial case for teaching-oriented universities

Operating costs per baccalaureate student, campus with 10,000 students (2011 $)

	Teaching-oriented university	*Traditional university*
Teaching and related (including academic administration, classroom support, clerical support, curriculum development, distance education)	$5,500	$9,100
Academic services (including library, student services, recruitment, bursaries, and information technology)	$2,200	$2,200
Institutional services (including administration, facilities, capital equipment, renovation, debt interest, and contribution to capital costs)	$2,200	$3,000*
Total	**$9,800**	**$14,200**
Memoranda:		
Cumulative surplus/debt after seven years	$27 million surplus	$167 million debt
Annual undergraduate enrolments at maturity	10,000	10,000
Student tuition per year	$5,300	$5,300
Average class size	44	44
Share of teaching performed by full-time faculty	70%	70%
Teaching load of full-time faculty (1-semester courses per year)	8	4

Note: Numbers may not add due to rounding.
*Includes debt interest of $600.

Smaller classes, lower tuition…

Comparison of teaching-oriented university with traditional university (balanced budget scenarios)

	Teaching-oriented university		*Traditional university*
Strategy for reaching a balanced budget	*Preferred strategy: offer small classes and lower tuition for students*	*Alternative strategy: offer very low tuition and allow class sizes to increase*	*Increase class sizes*
Cumulative surplus/debt after seven years	none	none	none
Annual undergraduate enrolments at maturity	10,000	10,000	10,000
Student tuition per year	**$4,800**	$2,900	**$5,300**
Average class size	**44**	78	**78**
Share of teaching by full-time faculty	70 percent	70 percent	70 percent
Teaching load of full-time faculty	8	8	4

Recruiting great faculty...

- Campus in the GTA
- Attractive working conditions
  - 4 x 3 = 12 hours per week in classroom for 26 weeks/year is demanding
  - but there are 26 more paid weeks in the year to prepare courses, mark exams, conduct research, take vacation and write books
- Supply and demand
  - 5 PhD holders in Ontario for every full-time faculty
  - 2,100 new PhD graduates and 1,400 PhDs coming to Ontario every year (4.4 times the 800 full-time faculty reaching retirement age)
  - Labour market for faculty in the US makes Ontario attractive
- Novelty and opportunity for innovation

AUCC membership criteria built into design

Two-year academic credential

- Create a new two-year college credential that will prepare students to enter the third year of university, modeled after the associate degree found in most North American jurisdictions
  - Develop curriculum in consultation with colleges and universities

Three-year baccalaureate

- Increase the enrolment in three-year degree programs, and it should equalize the per-student funding for three- and four-year programs
  - Ask each university to set targets

Reducing university inflation and improving quality

The bargain: Government and universities negotiate an acceptable annual rate of inflation

Government responsibilities

- Provide full funding for inflation each year (from government grants and/or tuition)
- Fund enrolment growth separately

University responsibilities

- Stop the deterioration:
  - class sizes, reliance on part-time faculty, and semester lengths
- In the medium term, introduce system-wide testing of actual student learning

New formula for operating grant

- Introduce a new formula for the distribution of the operating grant for all of the existing universities
  - Teaching: separate envelopes for
    - spaces for first- and second-year students
    - spaces for third- and fourth-year students
    - spaces for research-based master's and doctoral students
    - spaces for professional programs
    - special fund to support teaching enhancement
  - Research
    - Basic amount
    - Top-up for research overheads
    - Special purpose (e.g. technology, fine arts)
  - Other special missions (e.g. Northern, bilingual)

Negotiated target for university inflation

* The government should announce its intention to establish target institutional inflation guidelines for higher education institutions and begin a process of consultation about what target should be
* The government should commit that the combination of grants and fees will fund universities up to the target level of inflation.
* The government should require that, in return for receiving inflation funding, universities commit to having no deterioration in:
  a. the share of courses taught by full-time faculty
  b. average class sizes
  c. average instructional hours in courses

Information collection and dissemination

- Student-oriented website based on the *My University* site under development in Australia, including
  - for each broad course of study (e.g., economics), class size information, as experienced by the average student and for each year in the course of study
  - learning outcomes data, such as CLA results
  - annual graduate survey, including:
    - a course satisfaction survey similar to that in Australia, and
    - a graduate employment survey similar to that in the UK that assigns a "university degree required" to specific occupations

Measuring learning, encouraging teaching improvement

- introduce the CLA or an equivalent learning assessment tool, for the majority of undergraduates
- develop an Ontario Teaching Quality Indicator, adapted from that in Australian teaching quality indicator currently under development
- ask universities to develop detailed commitments for strengthening the teaching support activities, including teacher training for new faculty and for graduate students with teaching responsibilities

Collective bargaining framework

17. The government should announce its intention to withhold its grants for teaching during a strike in proportion to the number of classes that are not being taught as well as its intention to facilitate a process whereby students receive refunds on their tuition, with a portion of these funds being restored to the university if the lost classes are actually made up before the end of the semester