

Funding of Physics and Astronomy Graduate Students in Canada

From the Perspective of the University of Victoria

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on behalf of the UVic Physics and Astronomy graduate students

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Executive Summary

This report presents a comparison of funding levels of physics and astronomy graduate students at Canadian universities, compiling data on minimum funding, teaching assistant (TA) income, NSERC fellowship top-ups, and tuition. On average, the guaranteed minimum funding for University of Victoria (UVic) graduate students is approximately \$2000 lower than at other institutions. One important factor contributing to this problem is that yearly income from TAing for UVic grads amounts to almost \$3600 less than the average TA income, primarily because hourly TA wages at UVic are over 40% lower than the average wage nationally. NSERC top-ups are also much lower than average. The UVic graduate students recommend that minimum funding levels be increased to, at the very least, match the national average and that the Department of Physics and Astronomy coordinate with other UVic departments and faculties to pressure the university to increase TA wages during the upcoming renegotiation of the UVic TA contract.

Introduction and Methodology

It is standard practice for physics and/or astronomy departments at Canadian universities to guarantee their graduate students a minimum level of funding (see, e.g., table below). Most require grads to pay their tuition from this amount, and all meet this minimum partly by requiring grads to work as teaching assistants (TAs). The National Science and Engineering Research Council (NSERC) awards Postgraduate Scholarships and Canada Graduate Scholarships to top-ranked graduate students at the master's (PGS-M and CGS-M) and doctoral (PGS-D and CGS-D) levels; a university will typically award an NSERC fellowship holder an additional scholarship as a top-up.

The aim of this report is to compare minimum funding levels, tuition, TA income, and NSERC top-ups for physics and astronomy graduate students at Canadian institutions to those at the University of Victoria (UVic). These fields were selected as the fairest and most nationally consistent tracers of grad funding. The data was gathered preferentially from departmental websites summarizing their graduate financial support situation, but also from graduate secretaries or graduate students attending the university in question where websites did not contain enough information. (The source of the data is noted in the table below.) Minimum funding levels have been divided into MSc and PhD minimum funding, as they typically vary. Tuition denotes full domestic tuition and fees, as most universities (including UVic) subsidize international students so that they effectively pay domestic tuition.

Results

The results are given in the table below, and are compared to UVic graphically in Figures 1-9. In general:

- At minimum funding levels, UVic master's students earn \$1972 less per year than the national average.
- At minimum funding levels, UVic doctoral students earn \$1993 less per year than the national average.
- TAs in our department earn \$3594 less per year than the national average, given mean wages that are \$15 an hour lower and an average of 2 hours less per week.
- The average ratio of TA income to tuition is 1.7 nationally, but is only 0.8 at UVic.
- NSERC PGS-M, PGS-D, and CGS-D fellowship holders at UVic are topped up \$2353, \$2144, and \$5727 less per year than the national average, respectively.

Table 1

University	Min Funding MSc	Min Funding PhD	Tuition paid from min funding?	Min Funding after tuition MSc	Min Funding after tuition PhD	NSERC PGS-M Top Up	NSERC PGS-D Top Up	NSERC CGS-D Top Up	Income from TA	Number of Hours per Week	Hourly wage	Tuition and fees	Source
University of Victoria	\$20,200	\$21,200	Yes	\$14,371	\$15,371	\$4,000	\$4,000	\$0	\$4,743	7	\$21	\$5,829	https://www.phys.uvic.ca/grad/support.html ; http://registrar.uvic.ca/grad/continuing/fees/tuitionandfees.html
University of British Columbia	\$22,959	\$25,791	Yes	\$18,031	\$20,863	\$8,000	\$8,098	\$4,098	\$8,726	13	\$23	\$4,928	http://www.physics.ubc.ca/graduate/support.php
Simon Fraser University	\$21,974	\$24,972	Yes	\$16,473	\$19,471	\$6,250	\$6,250	N/A	N/A	N/A	N/A	\$5,501	http://www.physics.sfu.ca/teaching/grad/financial_info ; http://students.sfu.ca/fees/gradfees.html
University of Calgary	\$20,000	\$20,000	Yes	\$13,080	\$13,080	\$9,920	\$9,920	\$9,920	\$11,500	12	\$40	\$6,920	Ms. Tracy Korsgaard, graduate secretary
University of Alberta	\$23,616	\$23,616	Yes	\$18,784	\$18,784	\$11,627	\$10,000	\$10,000	\$15,744	12	\$42	\$4,832	http://www.phys.ualberta.ca/grad/gradnew_fin_msc.php ; http://www.phys.ualberta.ca/grad/gradnew_fin_phd.php ; http://www.gradstudies.ualberta.ca/regfees/
University of Saskatchewan	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	\$15,000	12	\$39	\$3,652	http://artsandscience.usask.ca/physics/graduates/handbook.php ; http://www.students.usask.ca/moneymatters/tuition/graduate/ ; http://www.usask.ca/cgsr/prospective_students/tuition.php

University of Regina	N/A	N/A	N/A	N/A	N/A	\$5,000	\$6,000	N/A	\$4,500	N/A	N/A	N/A	http://argus.phys.uregina.ca/drupal/dphys/node/78
University of Manitoba	\$19,400	\$20,400	Yes	\$15,072	\$16,072	\$5,000	\$2,500	\$2,500	\$3,000	N/A	N/A	\$4,328	http://www.physics.umanitoba.ca/grad/gradprog.html ; http://umanitoba.ca/student/records/fees/1031.htm ; http://umanitoba.ca/student/records/fees/986.htm
University of Western Ontario	\$22,300	\$22,300	Yes	\$14,401	\$14,401	N/A	N/A	N/A	\$9,400	10	\$29	\$7,899	http://www.physics.uwo.ca/graduate/financial-support.html
McMaster University	\$23,380	\$23,380	Yes	\$17,257	\$17,257	\$6,357	\$2,657	N/A	\$10,244	9	\$39	\$6,123	From Rachel Ward and Philip Ashby, grads at McMaster.
University of Toronto (Physics)	\$18,000	\$18,000	No	\$18,000	\$18,000	\$3,576	\$7,800	\$7,800	\$5,292	4	\$40	\$6,366	http://www.physics.utoronto.ca/graduate/handbook/2009-2010-sections-pdf/pdf-financial-support.pdf ; http://www.provost.utoronto.ca/link/students/fees10/dom_sgs.htm
University of Toronto (Astronomy)	\$19,000	\$19,000	No	\$19,000	\$19,000	\$5,000	\$5,000	\$5,000	\$5,292	4	\$40	\$6,366	http://www.astro.utoronto.ca/graduate/grad_financial_support
York University	\$20,815	\$21,815	Yes	\$14,737	\$15,737	N/A	N/A	N/A	\$10,945	7	\$48	\$6,078	http://www.physics.yorku.ca/grad/financial.html ; http://www.yugsa.ca/index.php?section_id=5 ; http://sfs.yorku.ca/fees/courses/index.php?term=fw09&faculty=Graduate%20BStudies
Queens University	\$24,250	\$25,450	Yes	\$18,250	\$19,450	\$5,000	\$5,000	N/A	N/A	9	N/A	\$6,000	http://www.physics.queensu.ca/Graduate/prospective.html#financial

University of Waterloo/ Guelph	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Carleton University	\$22,500	\$23,500	Yes	\$15,664	\$16,664	N/A	N/A	N/A	N/A	N/A	N/A	\$6,836	http://www.ocip.carleton.ca/infostd/general.html
University of Ottawa	\$19,588	\$22,237	Yes	\$12,796	\$15,446	N/A	N/A	N/A	N/A	N/A	N/A	\$6,791	http://www.physique.uottawa.ca/scholarships.html
University of Ottawa (w/ tuition waiver given 8/10 entrance GPA)	\$19,588	\$22,237	No	\$19,588	\$22,237	N/A	N/A	N/A	N/A	N/A	N/A	\$6,791	http://www.registrar.uottawa.ca/Default.aspx?tabid=3402 http://www.physics.mcgill.ca/grads/finance.html
McGill University	\$19,200	\$19,200	Yes	\$15,989	\$15,989	\$6,500	\$6,500	\$6,500	\$4,000	N/A	N/A	\$3,211	http://www.registrar.uottawa.ca/Default.aspx?tabid=3402 http://www.physics.mcgill.ca/grads/finance.html
Average	\$21,048	\$22,069		\$16,343	\$17,364	\$6,353	\$6,144	\$5,727	\$8,337	9	\$36	\$5,791	

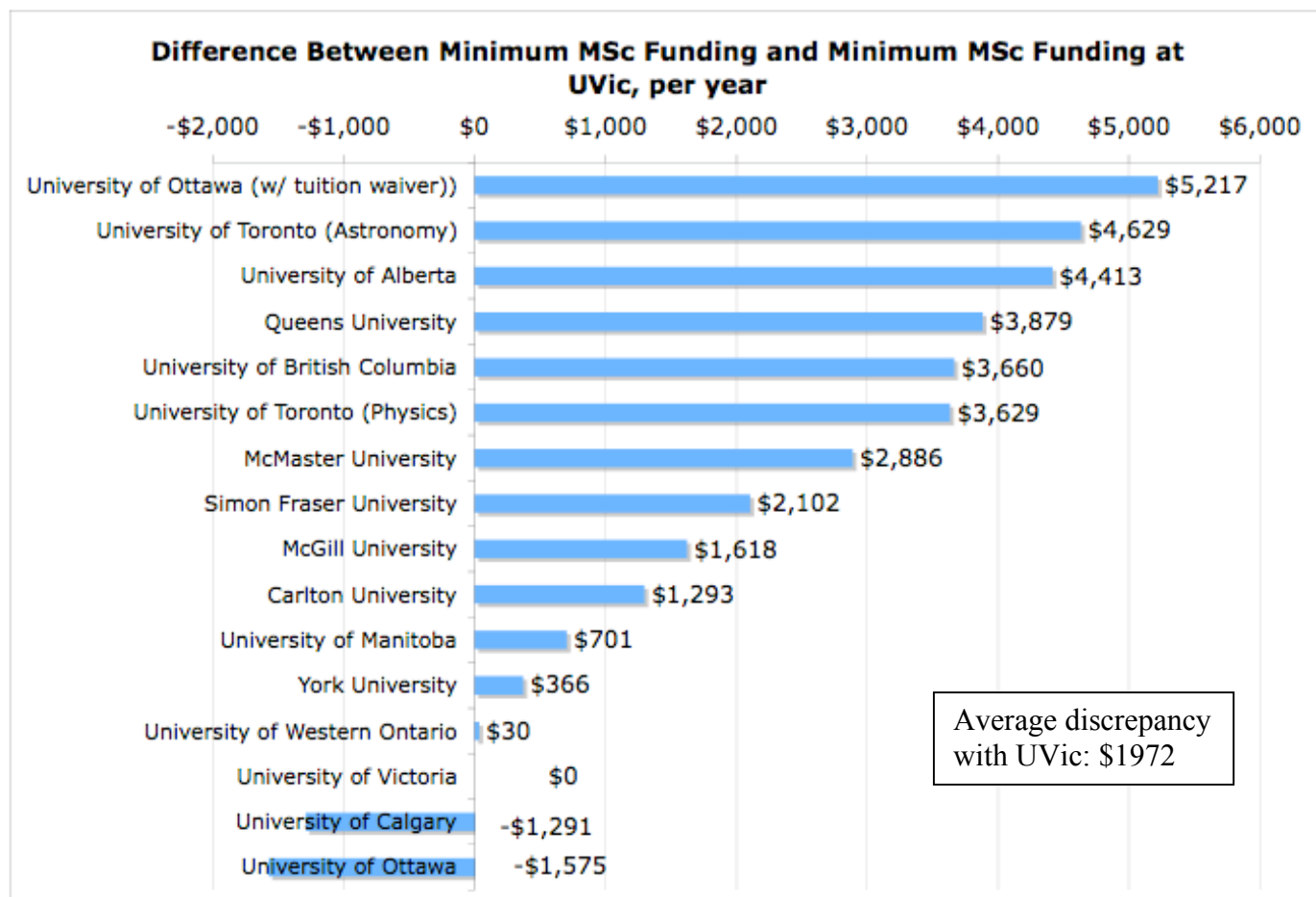
Figure 1

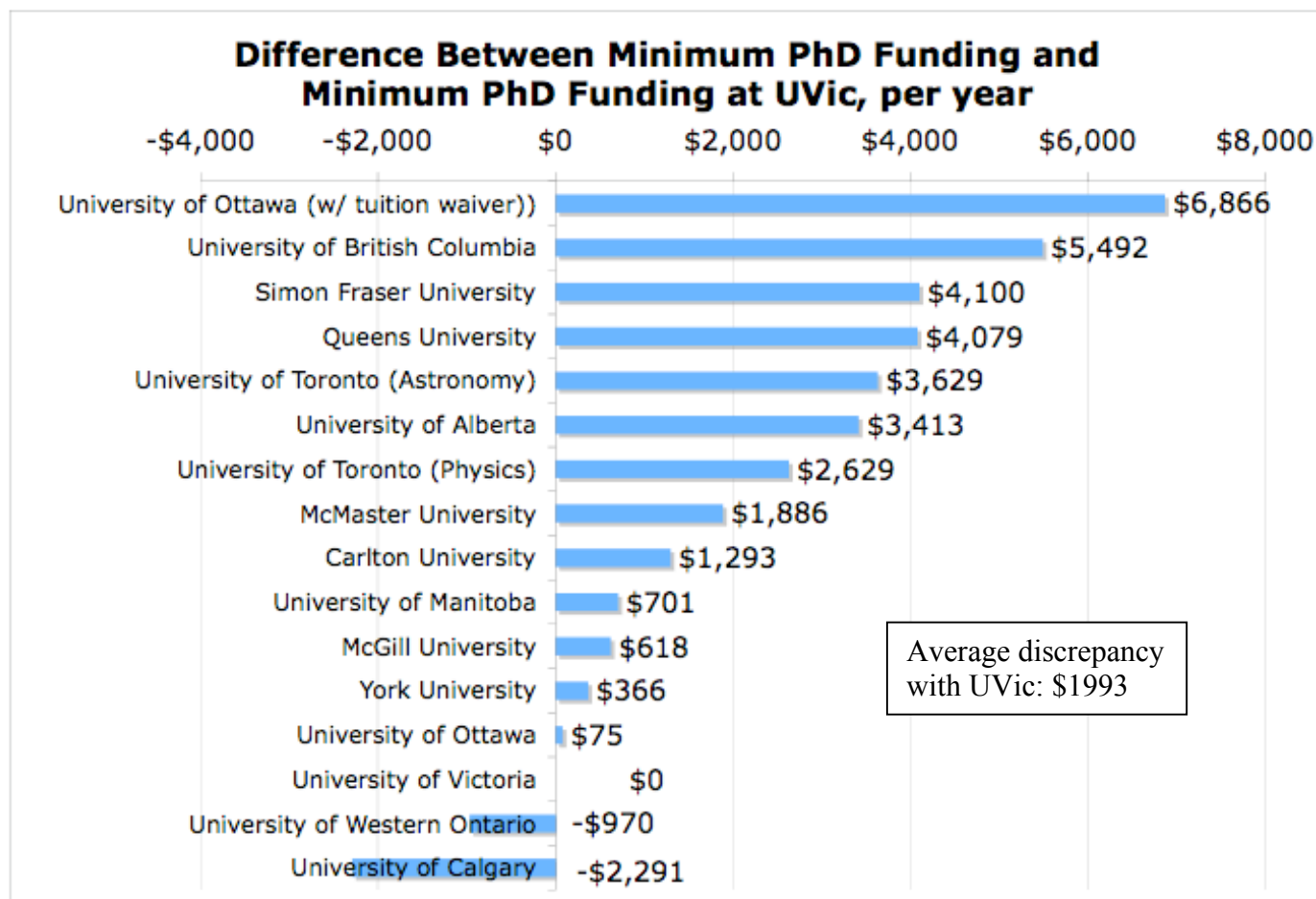
Figure 2

Figure 3

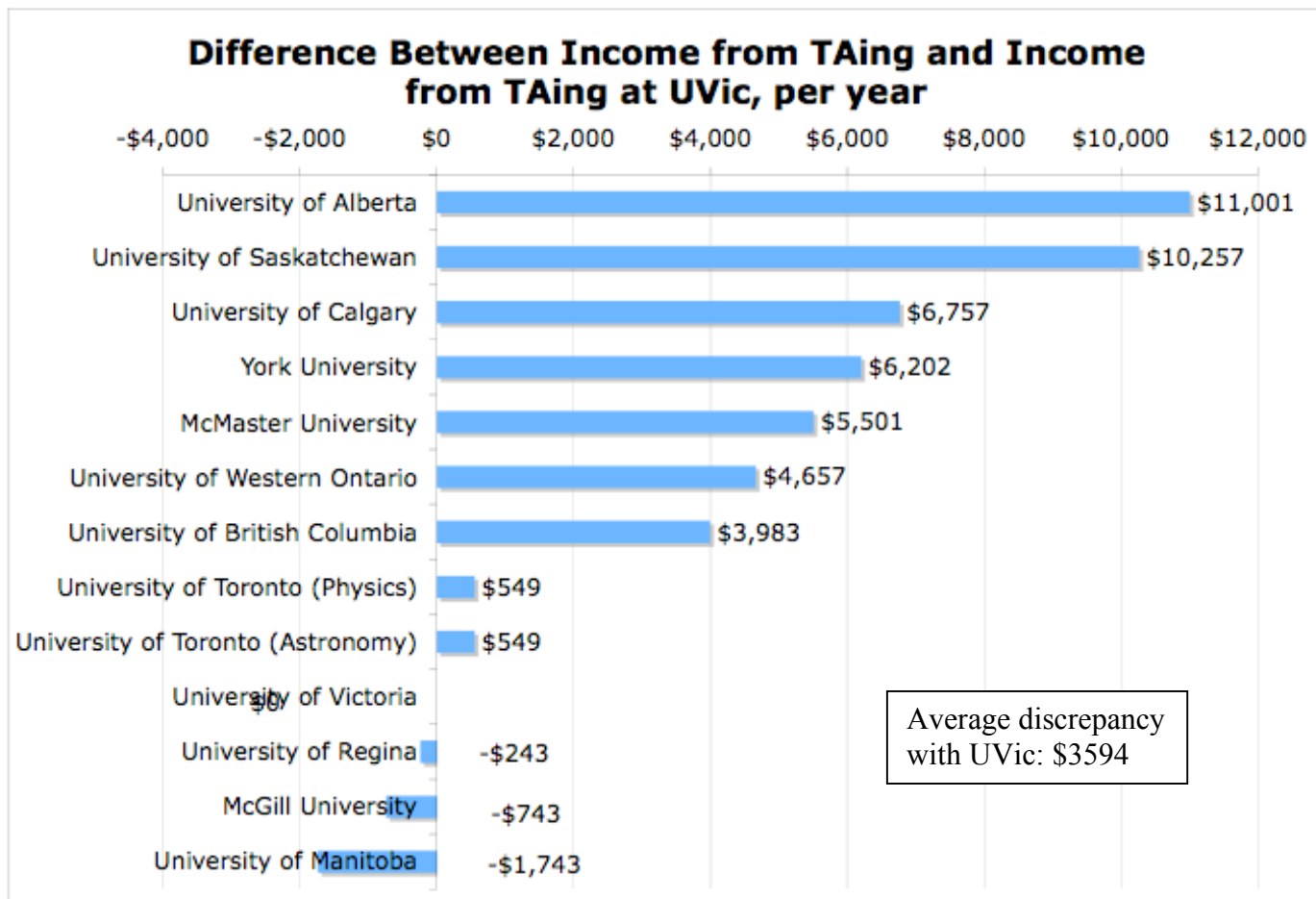


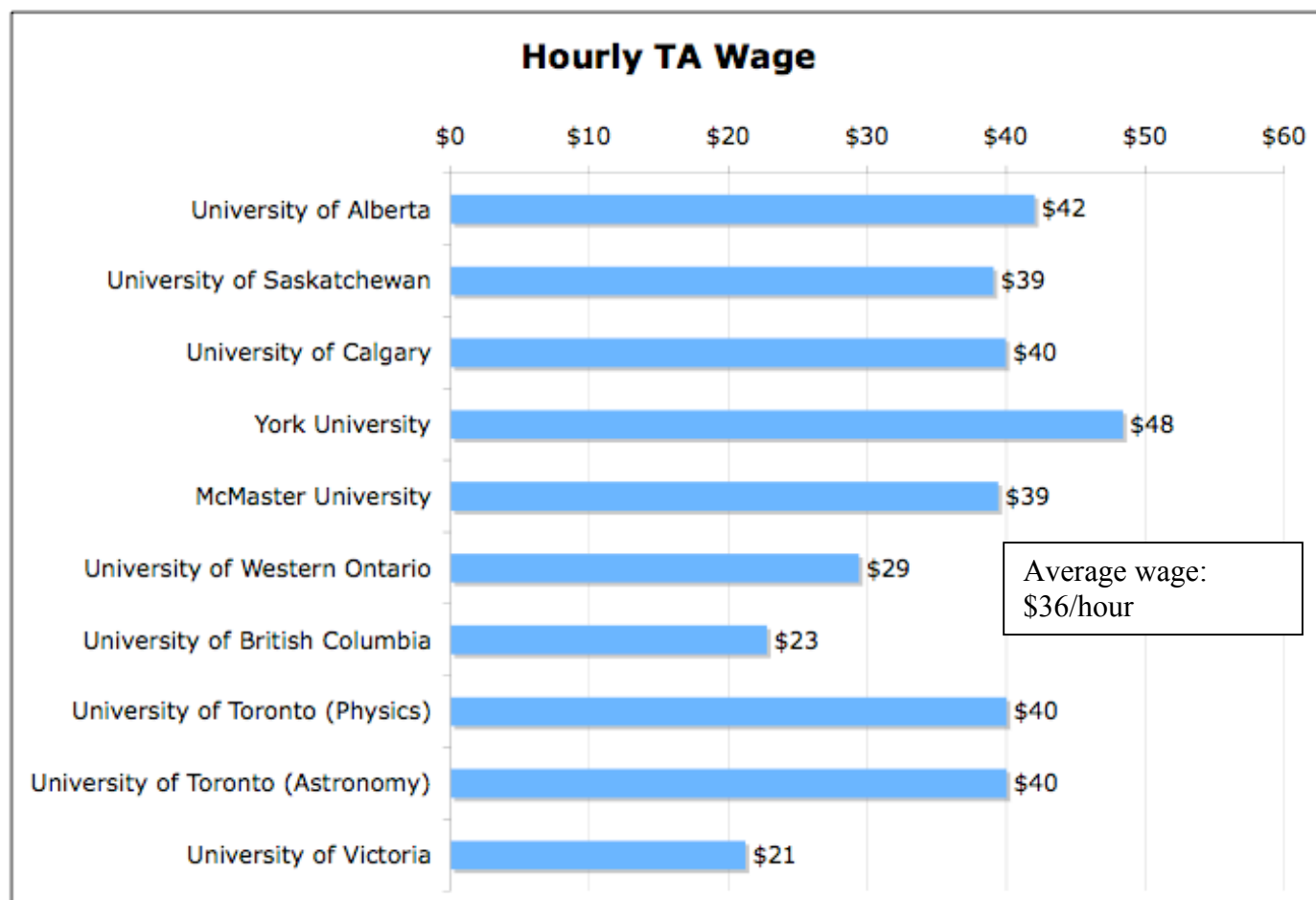
Figure 4 (Universities in the same order as in Figure 3)

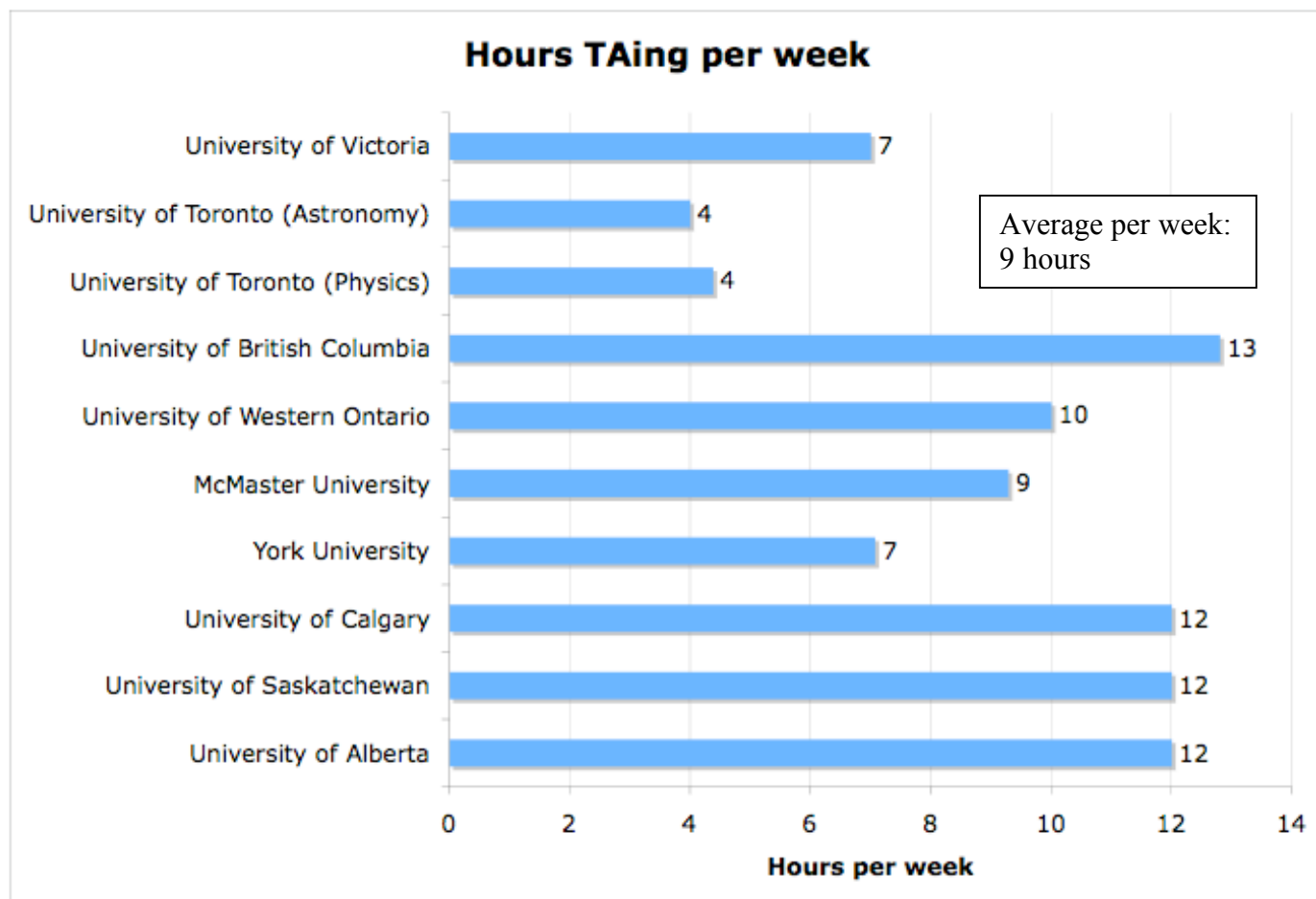
Figure 5 (Universities in the same order as in Figure 3)

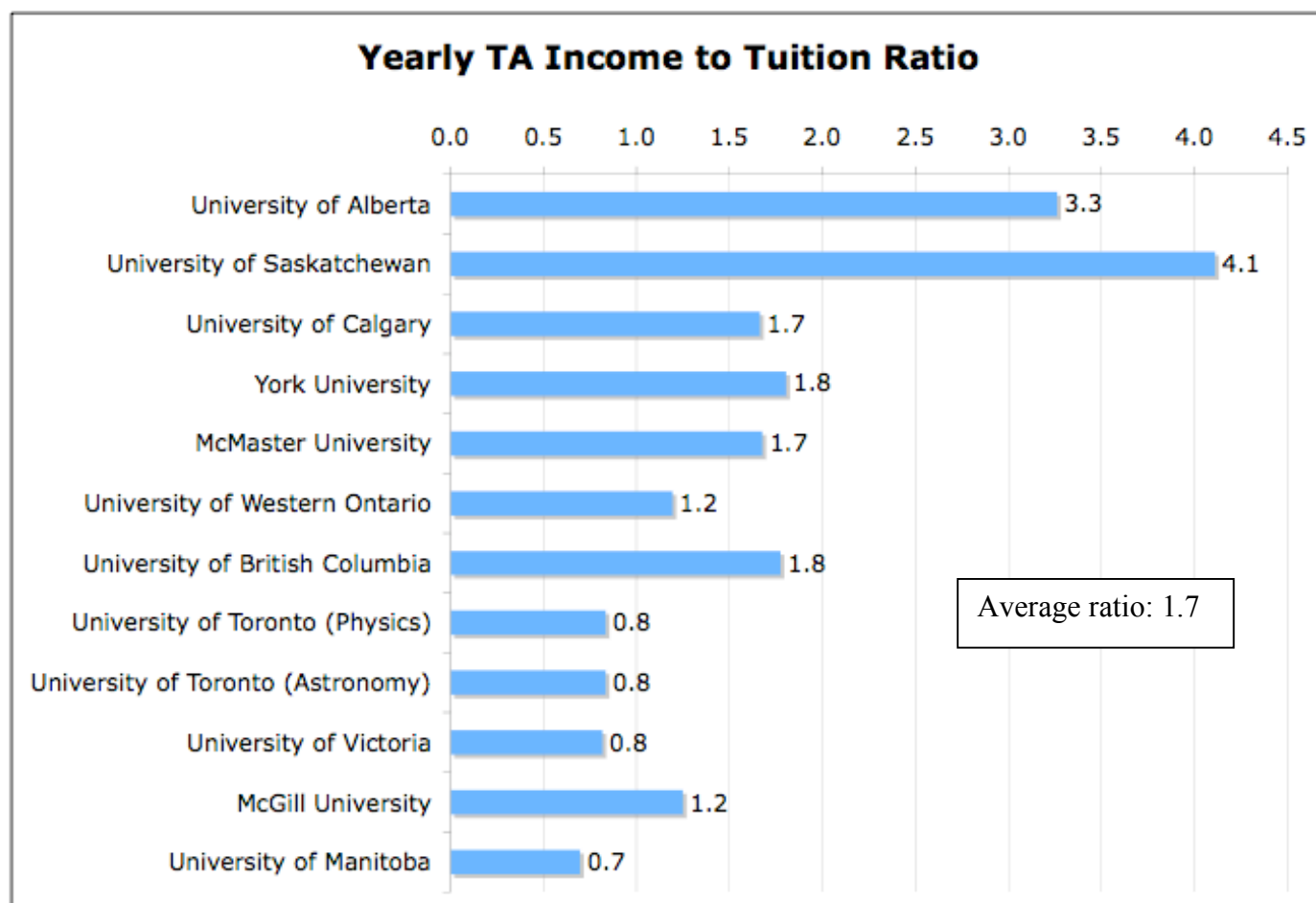
Figure 6 (Universities in the same order as in Figure 3)

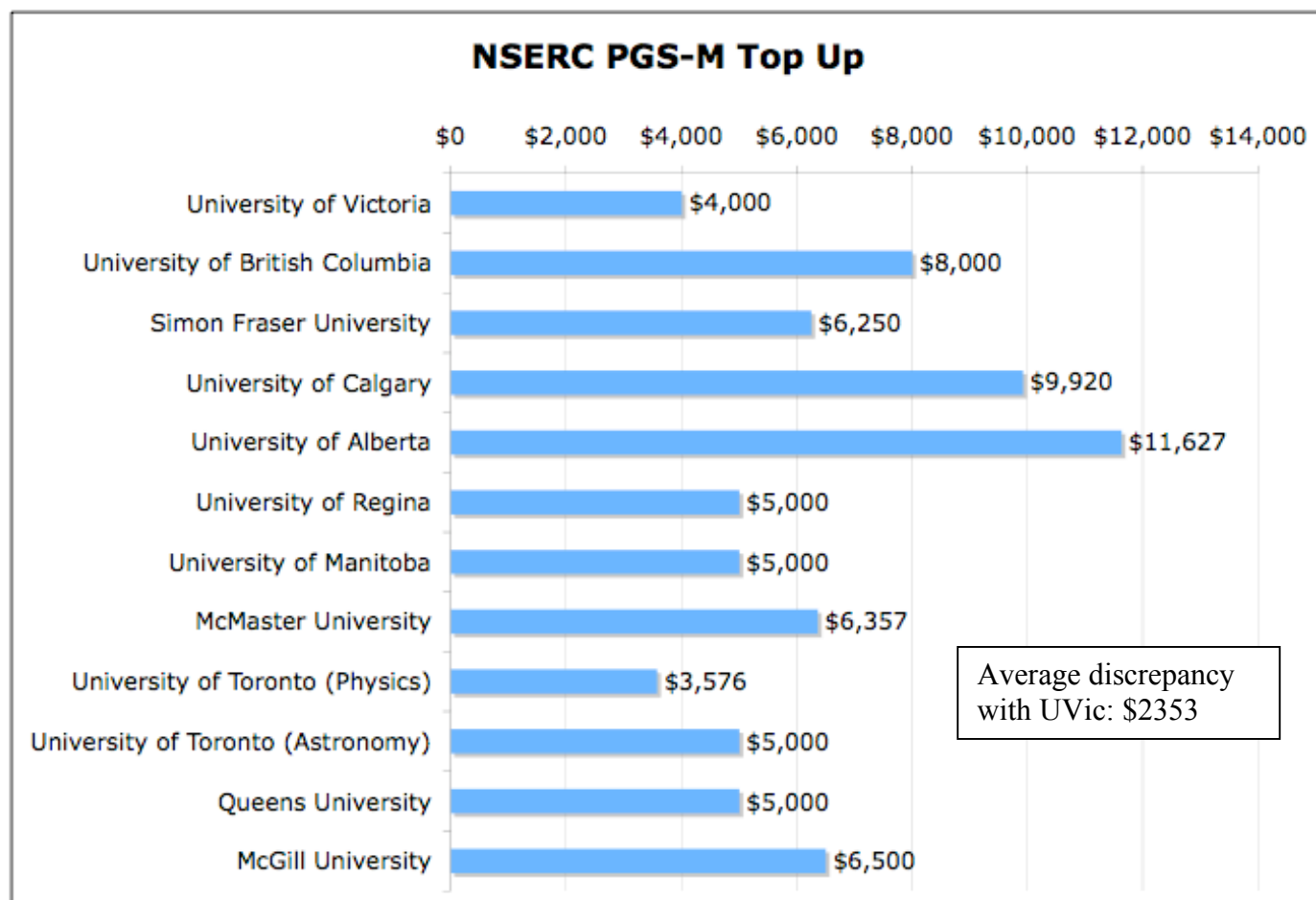
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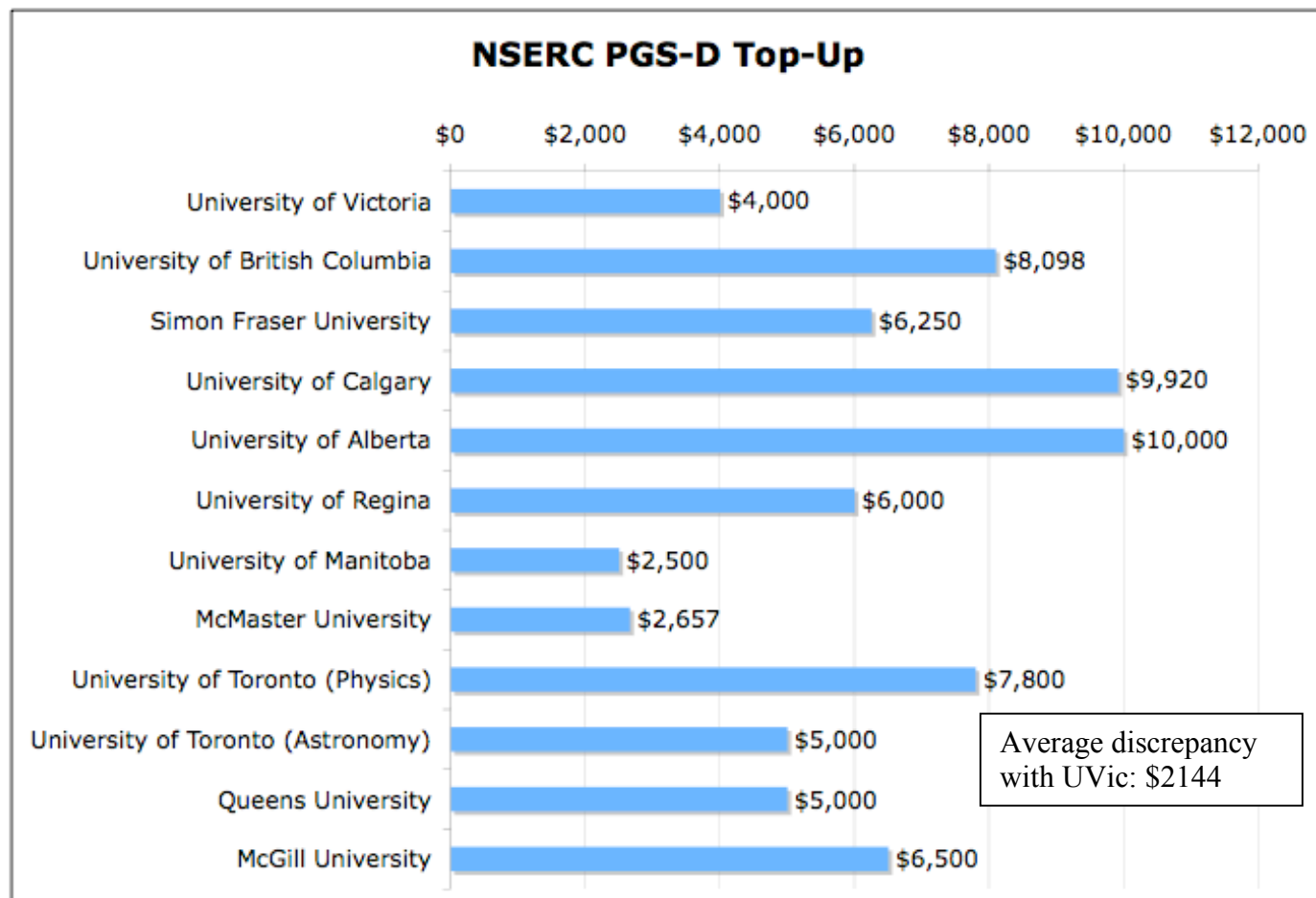
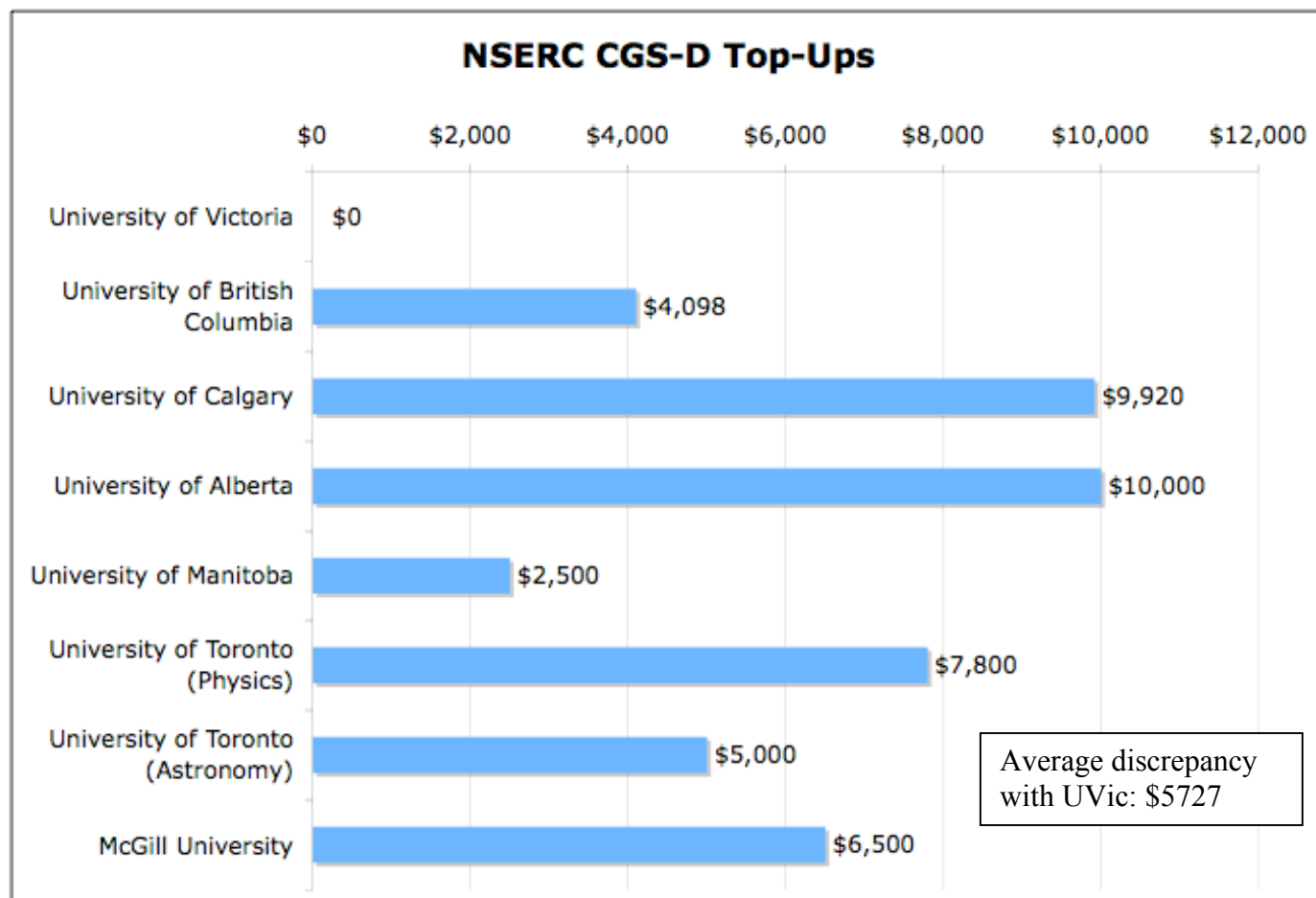
Figure 8

Figure 9

Discussion and Recommendations

It is apparent that, by many measures, UVic physics and astronomy grads are paid less than grads at other Canadian universities. This is particularly concerning with respect to the issue of minimum funding, especially given the relatively high cost of living in Victoria.¹ While three years ago, a similar disparity came to light and the department raised the minimum funding level to the national average, the solution may not be so simple this time. Without an increase in TA income, the increase would have to come from a student's advisor's NSERC grant, however, NSERC caps grad stipends at \$16,500 for MSc students and \$19,000 for PhD students.² This is especially problematic in the case of master's students as \$16,500 is only \$1600 more than the current RA minimum of \$14,900; in other words, if the minimum funding levels are increased by \$2000 to match the national average, NSERC grants will not be able to cover this difference. Increasing the minimum funding levels with the expectation that the difference will come from NSERC grants also restricts funds available to faculty to send their grads to conferences and meetings, or to purchase software and hardware. The need to pay such a large fraction of a grad's minimum funding from grants may also make it more challenging for faculty to obtain grants to fund a student, or at least to obtain funding for multiple students.

Given how low UVic TA wages are compared to the rest of the country, increasing grad TA income is the best way to improve our funding situation. Fortunately, 2010 is a bargaining year for UVic TAs' contract. The Physics and Astronomy grads are determined to pressure both our union and the university to bring our TA wages up to par with the rest of Canada. Departmental and faculty support for this would likely provide additional incentive for UVic to increase the pay of its TAs. We therefore encourage the Department to help the grads improve their funding situation by pressuring the university to increase TA wages during the bargaining process and by communicating and coordinating this effort with other departments and faculties.

Specifically, the recommendations of the UVic of Physics and Astronomy grads to the Department include:

1. Support the grads and CUPE 4163 (the TA union) in pressuring the university for a significant wage increase during the 2010 renegotiation of our TA contract. This includes communicating with other departments and faculties to ascertain if they are aware of the TA situation and coordinating action, as it seems likely that other departments are in a similar situation.
2. Increase the minimum grad funding level by ~\$2000 for both MSc and PhD students.
3. Adopt a policy to compare grad minimum funding levels to other Canadian institutions at regular intervals and revise as appropriate.
4. Continue to subsidize the difference between international and domestic tuition for international grads.
5. Pressure the university to increase Faculty of Graduate Studies scholarships for NSERC award holders. Note that the grads would **not** support using discretionary departmental funds which could otherwise be awarded to grads who do not hold NSERC fellowships to top-up NSERC award holders.

¹ See, e.g., <http://www.cfax1070.com/newsstory.php?newsId=12183>

² http://www.nserc-crsng.gc.ca/Professors-Professeurs/FinancialAdminGuide-GuideAdminFinancier/FundsUse-UtilisationSubventions_eng.asp