

CAP Statistical Study of the effects of changes to NSERC's Discovery Grants Program On Breadth of Support

Prepared with the help of Elizabeth Wall-Wieler (Winnipeg)

November, 2012

1. Preamble

Physics has traditionally performed very well internationally. The recent report by the Council of Canadian Academies lists physics as one of the six fields of research at which Canada excels [1]. In addition, a recent bibliometric study by the Institute of Physics (IOP) [2] found that over the last decade Canada has consistently performed among the top G7 countries with respect to citation impact of physics papers. In fact, Canada came out at the very top in 2010. NSERC is about to undertake an evaluation of the effects of the changes to the DG procedures after completion of the first five year cycle. CAP feels that it is imperative to ensure that the key features of the DG program that underlie Canada's strength in Physics are preserved in the long term.

One potentially relevant statement in the 2008 International Review that preceded the changes to the DG program is : “the broad base of DGP grants serves to sustain an important level of research capability and student training across the NSE disciplines and throughout Canada and thus contributes significantly to meeting the national needs for research results and highly qualified people”. This breadth may also be part of Canada's ability to “punch above its weight” at an international level.

CAP recently undertook a data-mining exercise to investigate the changes in the breadth of DG funding under the new system. Specifically, the goal was to determine whether or not there was a significant difference in Discovery Grant Funding for small and medium sized universities compared to large universities since the change in NSERC funding policy beginning in 2009. The change in regional distribution of funds was also examined. In light of the potential impact of these apparent trends, we recommend that NSERC undertake a more extensive analysis of these issues.

The data are presented in two parts. The first set, summarized in Section 4, describes university funding per year averaged over the two most recent granting cycles, 2004-2008 and 2009-2011, i.e. the last cycle under the old system and the first three years under the new system. Unfortunately the 2012 data were not available on the NSERC search engine at the time the data were taken. The second set, starting in Section 5, looks at the yearly trends between 2004 and 2011. Section 2 includes definitions of the programs examined, Section 3 describes the different analyses used, and Section 6 summarizes the results.

2. Definitions

2.1 All Discovery Programs – Using the NSERC Awards Search Engine, three different subgroups were available for search: Discovery Grants Programs, Research Partnerships Programs and Training Programs. Table 1 displays all Programs included.

Table 1 - All Discovery Programs
-Attaches de recherché (H)
-Bilateral Exchange Program (H)
-Brockhouse Canada Prize for Interdisciplinary Research in Science and Engineering
-Canada Excellence Research Chairs
- Canada Research Chairs
-Centers for Research in Youth, Science Teaching and Learning
-Collaborative Health Research Projects
-Collaborative Project Grants (H)
-Collaborative Research and Training Experience
-Collaborative Research Opportunities Grants
-Collaborative Special Project Grants
-Conference Grants (H)
-Discovery Frontiers – Northern Earth System Research
-Discovery Grants Program – Accelerator Grant
-Discovery Grants Program – Accelerator Supplements
-Discovery Grants Program – Group
-Discovery Grants Program – Individual
-Discovery Grants Program – Institutes and Initiatives
-Discovery Grants Program – Leadership Support
-Discovery Grants Program – Multidisciplinary Network Groups
-Discovery Grants Program – Northern Research Supplements
-Discovery Grants Program – Project
-Discovery Grants Program – Ship Time
-EWR Steacie Fellowship – Supplements
-Foreign Researcher Awards (H)
-Forestry Postdoctoral Assistantships (H)
-General Research Grants (H)
-Genomics Projects
-Gerhard Herzberg Canada Gold Medal for Science and Engineering
-Government of Canada’s Program for International Polar Year
-Infrastructure Grants H)
-International: Workshops
-International: Collaborative Research Grants
-International: Opportunity Fund

-International: Foreign Researcher (H)
-International: North American Research Fellowships
-John C. Polanyi Award
-Major Facilities Access Grants
-Major Resources Support Program – Infrastructure
-Michael Smith Award for Science Promotion – Individual
-Michael Smith Award for Science Promotion – Project
-Miscellaneous – Scholarships and Fellowships – Project
-Miscellaneous Grants
-Miscellaneous Grants – Dissemination
-New Research Idea Grant (H)
-Northern Research Chairs Program – Grant
-NSERC Awards for Science Promotion – Individual
-Parental Leave – Research Grants
-Perimeter Institute
-Presidential Fund
-PromoScience
-Regional Office Discretionary Funds - Atlantic
-Regional Office Discretionary Funds – British Columbia
-Regional Office Discretionary Funds – Prairie
-Regional Office Discretionary Funds – Ontario
-Regional Office Discretionary Funds – Quebec
-Research Capacity Development in Small Universities
-Research Tools and Instruments – Category 1 (<\$150,000)
-Research Tools and Instruments – Category 1 (\$150,000 - \$325,000)
-Research Tools and Instruments – Category 1 (>\$325,000)
-Scientific Publication Grant (H)
-Special Research Opportunities – Canada-Israel Program
-Special Research Opportunity Program – Inter-American Collaboration
-Special Research Opportunity Program – Northern Research
-Special Research Opportunity Program – Pre-research
-Special Research Opportunity Program – Project
-Student Promoting Awareness of Research Knowledge
-Subatomic Physics Envelope - Group
-Subatomic Physics Envelope – Collaborative Special Projects
-Subatomic Physics Envelope – Conference (H)
-Subatomic Physics Envelope - Individual
-Subatomic Physics Envelope – Major Facilities Access
-Subatomic Physics Envelope – Major Resources Support Program

-Subatomic Physics Envelope - Project
-Subatomic Physics Envelope – Research Tools and Instruments
-Tri-Council Workshop/Networking Program
-Women’s Faculty Awards (H)

2.2 Discovery Grants – Here, a subset of the Discovery Programs were looked at. The subset can be found in Table 2

Table 2 - Discovery Grants Programs
-Discovery Grants Program – Accelerator Grant
-Discovery Grants Program – Accelerator Supplements
-Discovery Grants Program – Group
-Discovery Grants Program – Individual
-Discovery Grants Program – Institutes and Initiatives
-Discovery Grants Program – Leadership Support
-Discovery Grants Program – Multidisciplinary Network Groups
-Discovery Grants Program – Northern Research Supplements
-Discovery Grants Program – Project
-Discovery Grants Program – Ship Time

2.3 University Size, Total NSERC Funding (2010-2011) – To determine University Size, total NSERC Funding for the 2010-2011 Fiscal Year was used¹. Size was defined as follows:

Small: < \$3,000,000 (n = 27)

Medium: \$3,000,000 - \$12,000,000 (n = 11)

Large: > \$12,000,000 (n = 22)

Table 3 shows Total NSERC Funding for each University.

Table 1 - University Size by Total NSERC Funding (2010-2011)

Small	
École de Technologie Supérieure	Not Available ²
The King's University College	\$47,000
Trinity Western University	\$102,000
Mount Saint Vincent University	\$124,000
Nipissing University	\$172,000
Cape Breton University	\$180,000
Bishop's University	\$215,000
Brandon University	\$309,000

¹ http://www.nserc-crsng.gc.ca/doc/FactsFigures-TableauxDetailles/2010-2011Tables_e.pdf

² Total Funding was not available for 2010-2011, but Universities with similar Enrolment numbers received < \$3,000,000 in funding for the 2010-2011 Fiscal Year, so École de Technologie Supérieure was considered a small University

Thompson Rivers University	\$405,000
Université du Québec en Outaouais	\$541,000
HEC Montréal	\$668,000
Université de Moncton	\$845,000
Acadia University	\$1,040,000
The University of Winnipeg	\$1,127,000
Mount Allison University	\$1,147,000
St. Francis Xavier University	\$1,181,000
Royal Military College of Canada	\$1,215,000
University of Prince Edward Island	\$1,268,000
University of Northern British Columbia	\$1,379,000
Université du Québec en Abitibi-Témiscamingue	\$1,423,000
Saint Mary's University	\$1,549,000
Université du Québec à Chicoutimi	\$2,245,000
Wilfrid Laurier University	\$2,384,000
Brock University	\$2,639,000
Lakehead University	\$2,657,000
University of Ontario Institute of Technology	\$2,914,000
Université du Québec à Rimouski	\$2,942,000
Medium	
Trent University	\$3,054,000
Laurentian University	\$3,081,000
University of Lethbridge	\$3,164,000
Université du Québec à Trois-Rivières	\$3,207,000
University of Regina	\$3,512,000
Ryerson University	\$6,127,000
University of Windsor	\$7,866,000
York University	\$8,737,000
Université du Québec à Montréal	\$8,748,000
Memorial University of Newfoundland	\$9,450,000
Concordia University	\$10,063,000
Large	
University of New Brunswick	\$12,263,000
Carleton University	\$13,693,000
University of Victoria	\$14,961,000
University of Manitoba	\$15,877,000
Université de Sherbrooke	\$16,647,000
École Polytechnique de Montréal	\$16,909,000
Dalhousie University	\$18,141,000
Simon Fraser University	\$19,573,000
University of Guelph	\$22,068,000
The University of Western Ontario	\$23,208,000
University of Ottawa	\$23,329,000
Université de Montréal	\$24,256,000
McMaster University	\$28,100,000

University of Calgary	\$28,479,000
Queen's University	\$31,060,000
University of Saskatchewan	\$32,818,000
Université Laval	\$33,280,000
University of Waterloo	\$40,318,000
University of Alberta	\$46,102,000
McGill University	\$47,956,000
The University of British Columbia	\$64,558,000
University of Toronto	\$71,067,000

2.4 University Size, 2011 Full Time Enrolment – To determine University Size, 2011 Full Time Enrolment was used³. Universities with less than 1,000 Full Time Undergraduate and Graduate Students were excluded from the analysis. University Size was defined as follows:

Small: 1,000 – 10,000 Full Time Students (n = 32)

Medium: 10,000 – 25,000 Full Time Students (n = 16)

Large: > 25,000 Full Time Students (n = 12)

Table 4 shows 2011 Enrolment for each University

Table 2 - Full Time Undergraduate and Graduate Enrolment, 2011

Small	
Université du Québec en Abitibi-Témiscamingue	1100
Royal Military College of Canada	1390
Trinity Western University	2000
Bishop's University	2270
Brandon University	2280
Mount Saint Vincent University	2370
University of Northern British Columbia	2450
Mount Allison University	2580
Cape Breton University	2660
Université du Québec à Rimouski	3350
The King's University College	3370
Acadia University	3480
Université du Québec en Outaouais	3720
Nipissing University	3860
École de technologie supérieure	3890
University of Prince Edward Island	3920
Université du Québec à Chicoutimi	4140
St. Francis Xavier University	4170
Université de Moncton	4970
École Polytechnique de Montréal	5820
HEC Montréal	5870
Saint Mary's University	6320

³ <http://www.aucc.ca/canadian-universities/facts-and-stats/enrolment-by-university/>

The University of Winnipeg	6550
Thompson Rivers University	6650
Laurentian University	6810
Trent University	6880
Lakehead University	7180
University of Lethbridge	7260
Université du Québec à Trois-Rivières	7540
University of Ontario Institute of Technology	7800
University of Regina	8290
University of New Brunswick	9240
Medium	
University of Windsor	13400
Université de Sherbrooke	14700
Memorial University of Newfoundland	14960
Dalhousie University	15280
Brock University	15600
Wilfrid Laurier University	15710
University of Victoria	15810
University of Saskatchewan	15980
Simon Fraser University	17180
Queen's University	20800
Ryerson University	21300
Carleton University	21950
University of Manitoba	23090
Université du Québec à Montréal	24090
University of Guelph	24400
Concordia University	24900
Large	
McMaster University	25200
University of Waterloo	26100
The University of Western Ontario	27600
McGill University	28790
University of Calgary	29130
Université Laval	30500
University of Ottawa	33600
Université de Montréal	33610
University of Alberta	35070
The University of British Columbia	42030
York University	45950
University of Toronto	71000

3. Data

Data was retrieved from the NSERC website. Since NSERC funding runs in five year cycles, we wanted to determine if there was a significant difference between the 2004-2008 cycle and the 2009-2011 cycle. The Awards Search Engine was used retrieve all the data for the analysis.

The following analyses were done:

- 1) All Discovery Programs
 - a. Looking at differences in All Discovery Programs funding per year between the 2004-2008 cycle and the 2009-2011 cycle using Full Time Enrolment (2011) to determine University Size
 - b. Looking at differences in All Discovery Programs funding per year between the 2004-2008 cycle and the 2009-2011 cycle using total NSERC Funding (2010-2011) to determine University Size
 - c. Looking at differences in All Discovery Programs funding per year between the 2004-2008 cycle and the 2009-2011 cycle for each Province
- 2) Discovery Grants
 - a. Looking at differences in the Discovery Grants funding per year between the 2004-2008 cycle and the 2009-2011 cycle using Full Time Enrolment (2011) to determine University Size
 - b. Looking at differences in the Discovery Grants funding per year between the 2004-2008 cycle and the 2009-2011 cycle using total NSERC Funding (2010-2011) to determine University Size
 - c. Looking at differences in the Discovery Grants funding per year between the 2004-2008 cycle and the 2009-2011 cycle for each Province

4. Results: Average over Granting Cycles

4.1 All Discovery Programs, Full Time Enrolment

Here, all Discovery Programs were included, and University Size was determined using Full Time Enrolment. Table 5 and Table 6 summarize the results from this analysis.

Table 3 - Total Funding

Size	n	2004-2008		2009-2011		Difference in % of Total
		Funding	% of Total	Funding	% of Total	
Small	32	\$61,903,493	9.8	\$32,140,239	8.6	-1.2
Medium	16	\$221,751,757	35.1	\$126,711,617	33.9	-1.3
Large	12	\$347,854,658	55	\$215,382,841	57.6	+2.5
Total	60	\$631,509,908		\$374,234,697		

From Table 5, we can see that small and medium sized Universities are receiving a smaller percentage of the overall funding in the 2008-2011 cycle than they did in 2004-2008 cycle.

Table 4 – Average Funding per Year

Size	Average Funding per Year, 2004-2008	Average Funding per Year, 2009-2011	Difference	Proportion
Small	\$386,896.83	\$334,794.16	- \$52,102.68	0.865
Medium	\$2,771,896.96	\$2,639,825.35	- \$132,071.61	0.952
Large	\$5,797,577.63	\$5,982,856.69	+\$185,279.06	1.032

From Table 6 we can see that small and medium sized Universities received much less funding per year (small Universities only received 86.5% of the funding in 2009-2011 than they did in 2004-2008), while large Universities received more funding per year in 2009-2011.

4.2 All Discovery Programs, Total NSERC Funding

Here, all Discovery Programs were included, and Total NSERC Funding was used to determine University Size. Table 7 and Table 8 summarize the results.

Table 5 - Total Funding

Size	n	2004-2008		2009-2011		Difference in % of Total
		Funding	% of Total	Funding	% of Total	
Small	27	\$33,702,760	5.3	\$16,186,015	4.3	-1.0
Medium	11	\$65,388,098	10.4	\$35,124,437	9.4	-1.0
Large	22	\$532,419,050	84.3	\$322,924,245	86.3	+2.0
Total	60	\$631,509,908		\$374,234,697		

From Table 7, we can see that small and medium sized Universities are receiving a smaller percentage of the overall funding in the 2008-2011 cycle than they did in 2004-2008 cycle.

Table 6 - Average Funding Per Year

Size	Average Funding per Year, 2004-2008	Average Funding per Year, 2009-2011	Difference	Proportion
Small	\$249,650.07	\$199,827.35	-\$49,822.73	0.800
Medium	\$1,188,874.51	\$1,064,376.88	-\$124,497.63	0.895
Large	\$4,840,173.18	\$4,892,791.59	+\$52,618.41	1.011

From Table 8 we can see that small and medium sized Universities received much less funding per year (small Universities only received 80% of the funding in 2009-2011 than they did in 2004-2008), while large Universities received more funding per year in 2009-2011.

4.3 All Discovery Programs, Provinces

All Discovery Programs were included in this analysis where differences in funding for 2004-2008 and 2009-2011 were looked at for each Province. Table 9 and Table 10 summarize the results.

Table 7 - Total Funding by Province

Province	n	2004-2008		2009-2011		Difference in % of Total
		Funding	% of Total	Funding	% of Total	
Ontario	19	\$256,567,340	40.6	\$143,111,008	38.2	-2.4
Quebec	15	\$139,451,095	22.1	\$82,896,957	22.2	0.07
British Columbia	6	\$95,595,438	15.1	\$56,427,729	15.1	-0.06
Alberta	4	\$51,073,709	8.1	\$36,046,237	9.6	1.5
Nova Scotia	6	\$26,304,575	4.2	\$11,385,852	3.0	-1.1
Saskatchewan	2	\$22,109,887	3.5	\$26,223,880	7.0	+3.5
Manitoba	3	\$19,816,120	3.1	\$8,556,127	2.3	-0.85
Newfoundland	1	\$10,038,863	1.6	\$4,632,535	1.2	-0.35
New Brunswick	3	\$9,596,481	1.5	\$4,512,093	1.2	-0.31
Prince Edward Island	1	\$956,400	0.15	\$442,279	0.15	-0.03
Total	60	\$631,509,908		\$374,234,697.00		

Table 9 shows that Alberta, Quebec and Saskatchewan received a larger proportion of the total funds for the 2009-2011 cycle than they did for the 2004-2008 cycle. The rest of the Provinces received a smaller proportion of the total funds for the 2009-2011 cycle.

Table 8 - Average Funding per Year

Province	Average Funding per Year, 2004-2008	Average Funding per Year, 2009-2011	Difference	Percentage Change
British Columbia	\$3,186,514.60	\$3,134,873.83	-\$51,640.77	-1.6
Ontario	\$2,700,708.84	\$2,510,719.44	-\$189,989.40	-7.0
Alberta	\$2,553,685.45	\$3,003,853.08	\$450,167.63	+18
Saskatchewan	\$2,210,988.70	\$4,370,646.67	\$2,159,657.97	+98
Newfoundland	\$2,007,772.60	\$1,544,178.33	-\$463,594.27	-23
Quebec	\$1,859,347.93	\$1,842,154.60	-\$17,193.33	-1.0
Manitoba	\$1,321,074.67	\$950,680.78	-\$370,393.89	-28
Nova Scotia	\$876,819.17	\$632,547.33	-\$244,271.83	-28
New Brunswick	\$639,765.40	\$501,343.67	-\$138,421.73	-22
Prince Edward Island	\$191,280.00	\$147,426.33	-\$43,853.67	-23

From Table 10, we can see that Alberta and Saskatchewan received a more funding per year in the 2009-2011 cycle than they did in the 2004-2008 cycle, whereas the rest of the provinces received less funding.

4.4 – Discovery Grants, Full Time Enrolment

Only Discovery Grants were included in these analyses, in which 2011 enrolment was used to determine University Size. Table 11 and Table 12 summarize the results.

Table 9 - Total Funding

Size	n	2004-2008		2009-2011		Difference in % of Total
		Funding	% of Total	Funding	% of Total	
Small	32	\$39,283,085	11.1	\$21,225,770	10.0	-1.1
Medium	16	\$112,572,366	31.7	\$64,318,411	30.4	-1.4
Large	12	\$202,774,076	57.2	\$126,309,555	59.6	+2.4
Total	60	\$354,629,527		\$211,853,736		

Table 11 shows us that small and medium sized Universities received a smaller percentage of the total Discovery Grants Funding in the 2009-2011 cycle than they did in the 2004-2008 cycle, whereas large universities received a larger percentage of the total funding in the 2009-2011 cycle.

Table 10 - Average Funding per Year

Size	Average Funding per Year, 2004-2008	Average Funding per Year, 2009-2011	Difference	Proportion
Small	\$245,519.28	\$221,101.77	-\$24,417.51	0.901
Medium	\$1,407,154.58	\$1,339,966.90	-\$67,187.68	0.952
Large	\$3,379,567.93	\$3,508,598.75	\$129,030.82	1.038

From Table 12 we can see that small and medium sized Universities received less funding per year in the 2009-2011 cycle than they did in the 2004-2008 cycle. Large Universities received more funding in the 2009-2011 cycle.

4.5 – Discovery Grants, Total NSERC Funding

For the following analysis, only Discovery Grants were considered, and University Size was determined using Total NSERC Funding. Table 13 and Table 14 summarize the results.

Table 11 - Total Funding

Size	n	2004-2008		2009-2011		Difference in % of Total
		Funding	% of Total	Funding	% of Total	
Small	27	\$22,041,117	6.2	\$11,784,738	5.6	-0.7
Medium	11	\$40,096,884	11.3	\$21,261,115	10.0	-1.3
Large	22	\$292,491,526	83.5	\$178,807,883	84.4	+1.9
Total	60	\$354,629,527		\$211,853,736		

We can see from Table 13 that small and medium sized Universities are receiving a smaller percentage of the total Discovery Grants funding for 2009-2011 than they were for 2004-2008, whereas large universities are receiving a larger percentage of the total Discovery Grants Funding.

Table 12 - Average Funding per Year

Size	Average Funding per Year, 2004-2008	Average Funding per Year, 2009-2011	Difference	Proportion
Small	\$163,267.53	\$145,490.59	-\$17,776.94	0.891
Medium	\$729,034.25	\$644,276.21	-\$84,758.04	0.884
Large	\$2,659,013.87	\$2,709,210.35	\$50,196.48	1.019

Table 14 shows that small and medium sized Universities are receiving less funding per year in the 2009-2011 cycle than they were in the 2004-2008 cycle.

4.6 – Discovery Grants, Provinces

In the following analyses, differences in Discovery Grants funding were looked at for each province. Table 15 and Table 16 summarize the results.

Table 13 - Total Funding

Province	n	2004-2008		2009-2011		Difference in % of Total
		Funding	% of Total	Funding	% of Total	
Ontario	19	\$140,697,305	39.7	\$85,798,536	41	0.82
Quebec	15	\$77,346,742	21.8	\$49,539,330	23.4	1.57
British Columbia	6	\$47,934,853	13.5	\$29,568,802	14.0	0.44
Alberta	4	\$38,616,845	10.9	\$22,706,725	10.7	-0.17
Nova Scotia	6	\$14,539,842	4.1	\$7,120,436	3.4	-0.74
Saskatchewan	2	\$12,628,030	3.6	\$5,282,581	2.5	-1.07
Manitoba	3	\$9,273,236	2.6	\$5,348,735	2.5	-0.09
New Brunswick	3	\$6,421,048	1.8	\$3,149,711	1.5	-0.32
Newfoundland	1	\$6,367,277	1.8	\$2,975,930	1.4	-0.39
Prince Edward Island	1	\$804,349	0.2	\$362,950	0.2	-0.06
Total	60	\$354,629,527		\$211,853,736		

From Table 15, we see that British Columbia, Ontario and Quebec received a larger percentage of the total funding in the 2009-2011 cycle than they did in the 2004-2008 cycle.

Table 14 - Average Funding per Year

Province	Average Funding per Year, 2004-2008	Average Funding per Year, 2009-2011	Difference	Percentage change
Alberta	\$1,930,842.25	\$1,892,227.08	-\$38,615.17	-2.0
British Columbia	\$1,597,828.43	\$1,642,711.22	\$44,882.79	+2.8
Ontario	\$1,481,024.26	\$1,505,237.47	\$24,213.21	+1.6
Newfoundland	\$1,273,455.40	\$991,976.67	-\$281,478.73	-22
Saskatchewan	\$1,262,803.00	\$880,430.17	-\$382,372.83	-30
Quebec	\$1,031,289.89	\$1,100,874.00	\$69,584.11	+6.7
Manitoba	\$618,215.73	\$594,303.89	-\$23,911.84	-3.9
Nova Scotia	\$484,661.40	\$395,579.78	-\$89,081.62	-18
New Brunswick	\$428,069.87	\$349,967.89	-\$78,101.98	-18
Prince Edward Island	\$160,869.80	\$120,983.33	-\$39,886.47	-25

From Table 16, we can see that British Columbia, Ontario and Quebec received more funding per year between 2009 and 2011 than they did between 2004 and 2008. The other provinces received less funding per year between 2009 and 2011 than they did between 2004 and 2008.

5. Results - Trends in DG Funding Distribution 2004-2011

Notes:

*Figures 1 – 4 use 2011 Full Time enrolment to determine University Size

^Figures 5 – 8 use total NSERC funding to determine University Size

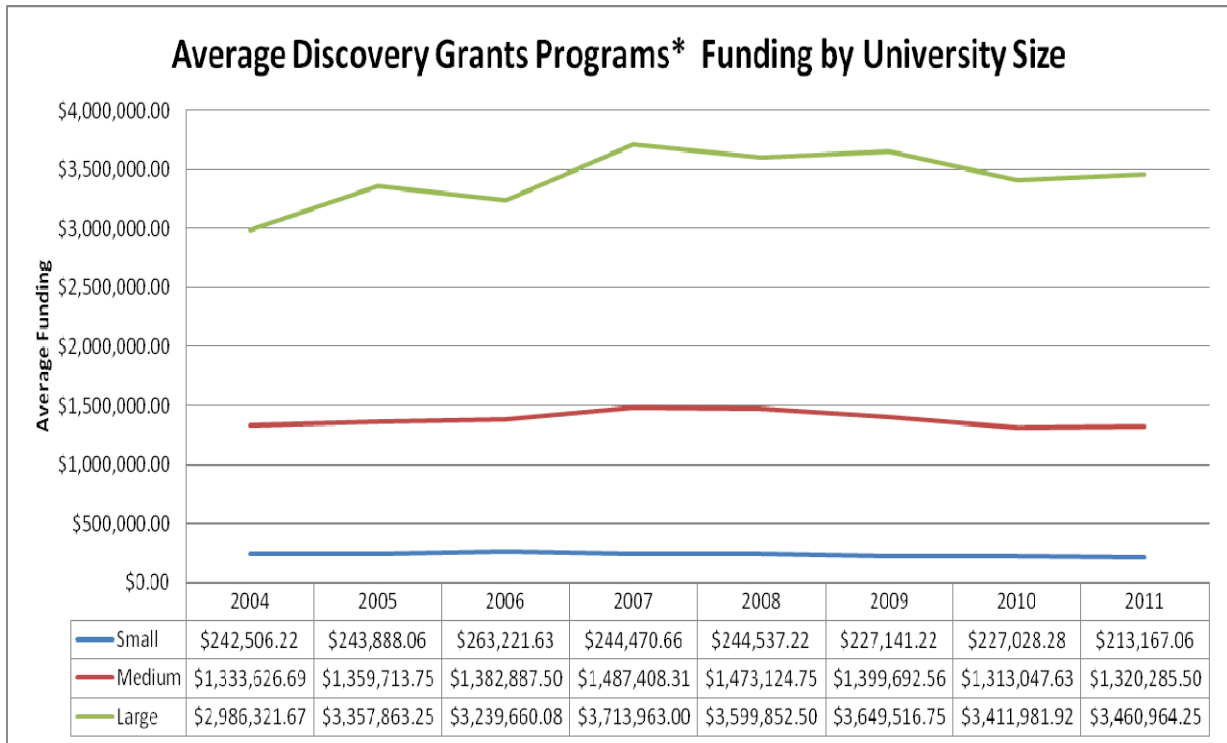
Define statistical terms used:

t	T-TEST (ratio of difference to deviation: larger means more significant)
df	DEGREES OF FREEDOM (roughly number of data points)
sig	SIGNIFICANCE (probability of producing same distribution by chance; smaller means more significant)

List of figures:

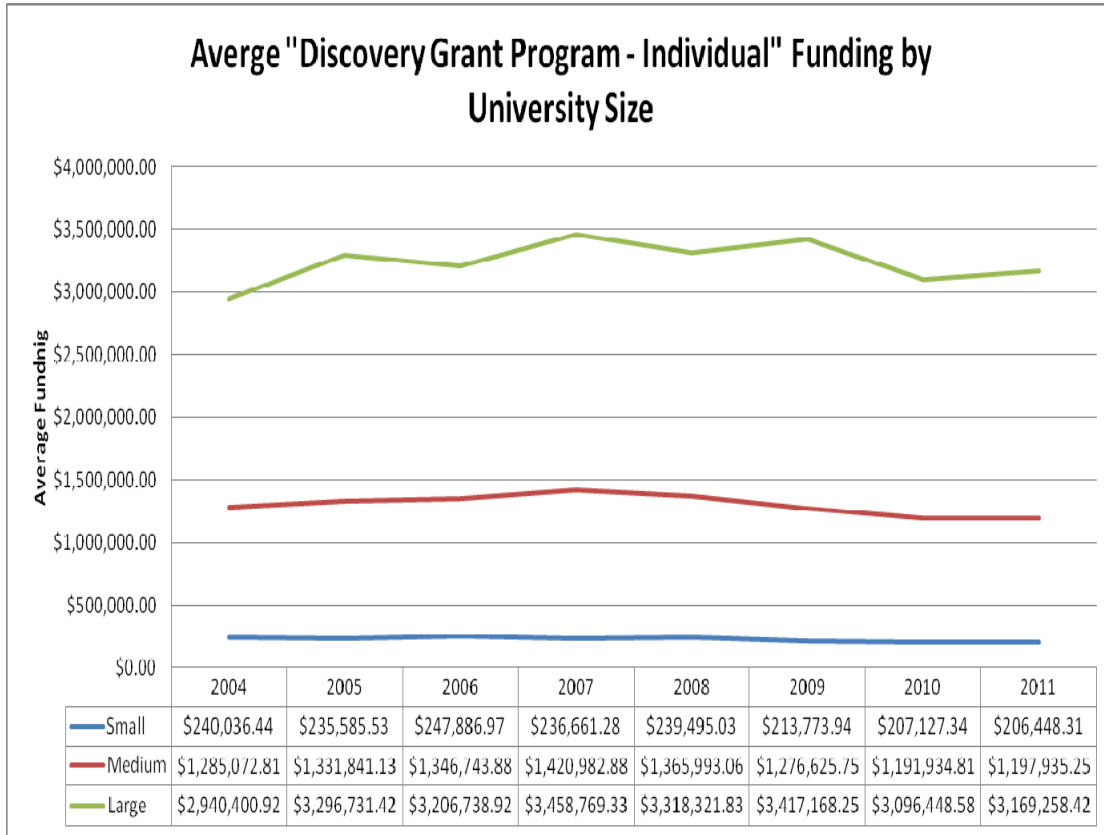
Page #	Figure	Title
15	1*	Average Discovery Grants Program* funding by university size
16	2*	Average Discover Grants Program – Individual funding by university size
17	3*	Average Discovery Grants Program – Accelerator Supplement by university size
18	4*	Average All Discovery Programs** funding by university size
19	5*	Average Discovery Grants Programs* funding by university size
20	6*	Average Discover Grants Program – Individual funding by university size
21	7*	Average Discovery Grants Program – Accelerator Supplement by university size
22	8^	Average All Discovery Programs** funding by university size

Figure 1:



University Size	Average Funding 2004-2008	Average Funding 2009-2011	Difference	%	t	df	Sig
Small	247,724.76	222,445.52	-25,279.24	-10%	1.908	31	.066
Medium	1,407,352.20	1,344,341.90	-63,010.30	-4.5%	1.075	15	.299
Large	3,379,532.10	3,507,487.64	127,955.54	3.4%	-1.434	11	.179

Figure 2:



University Size	Average Funding 2004-2008	Average Funding 2009-2011	Difference	T	df	Sig
Small	239,933.05	209,116.53	-30,816.52	2.428	31	.021
Medium	1,350,126.75	1,222,165.27	-127,961.48	2.594	15	.020
Large	3,244,192.48	3,227,625.08	-16,567.40	.227	11	.825

Figure 3:

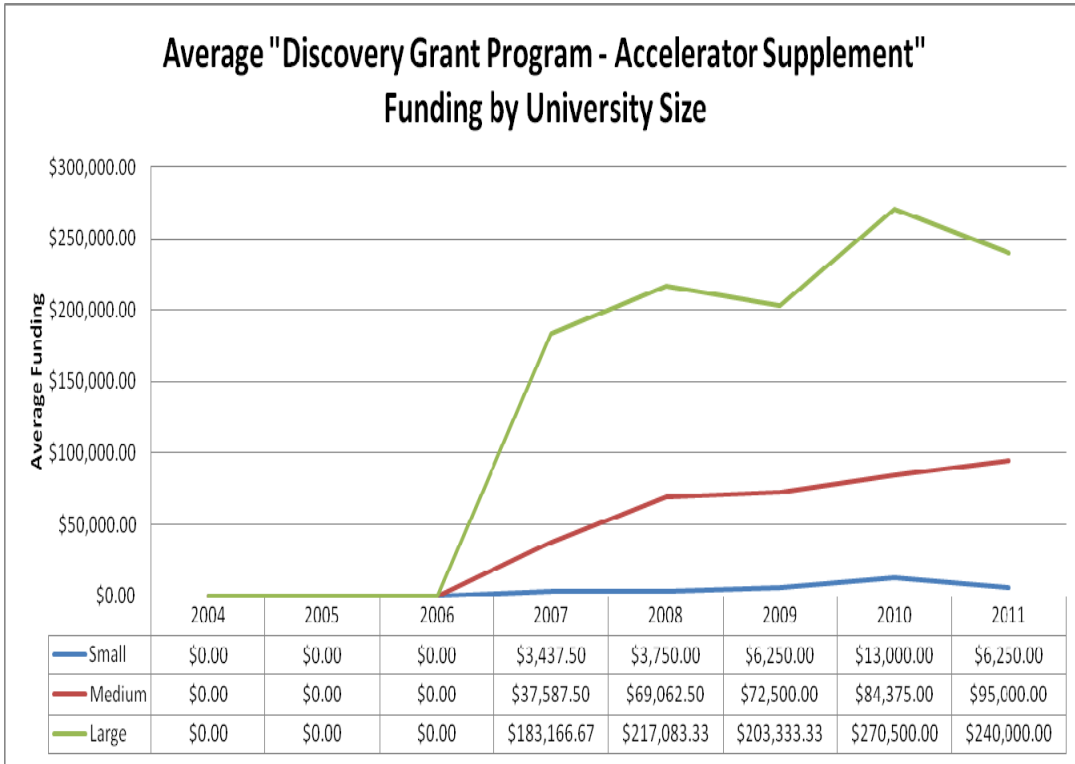
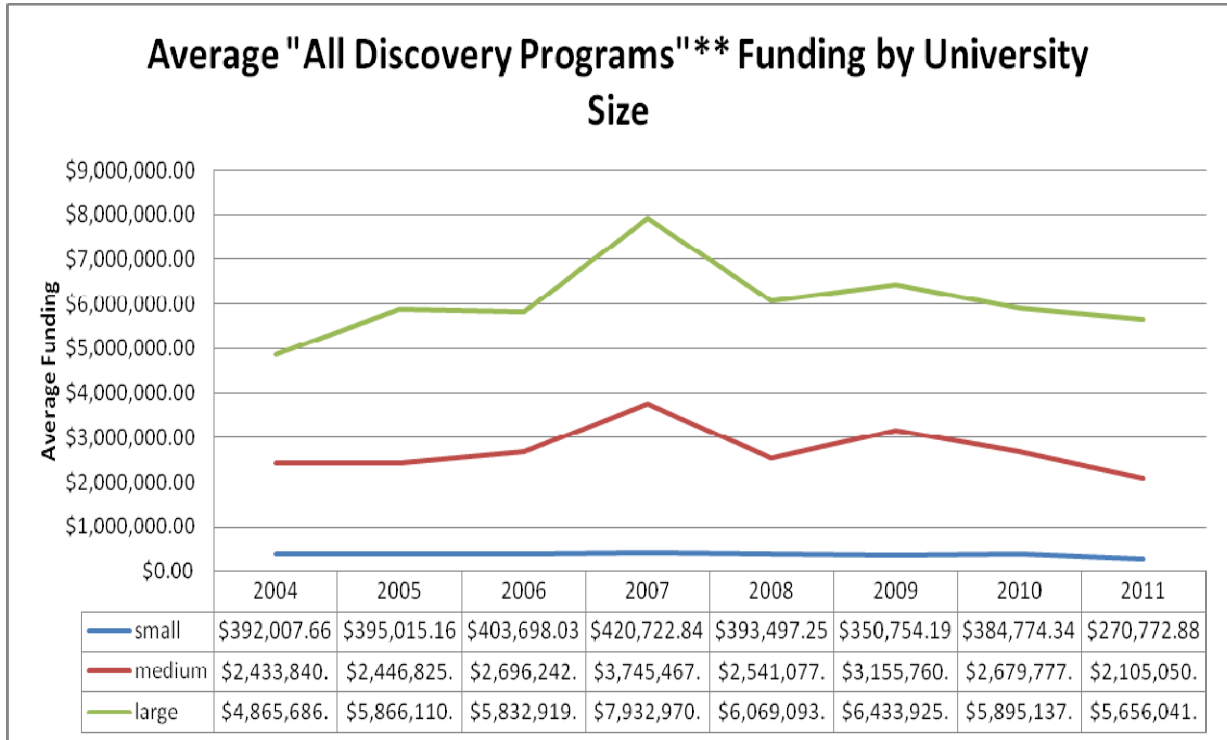
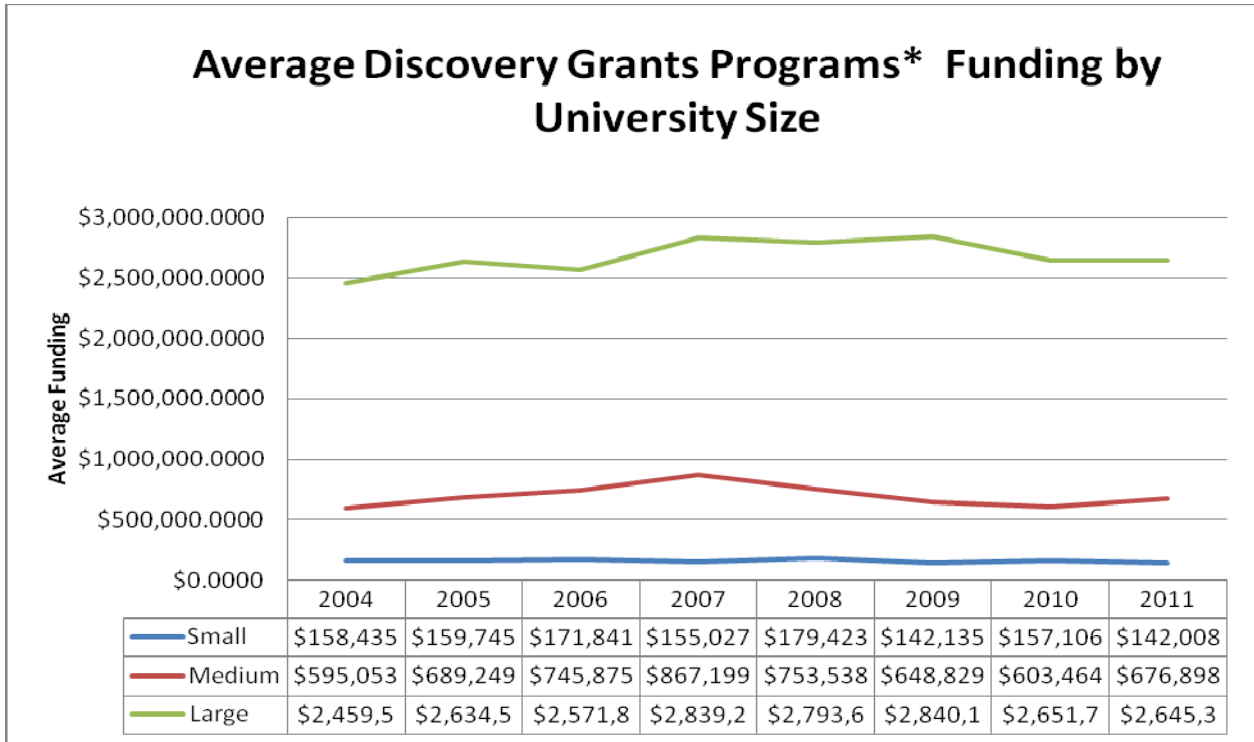


Figure 4:



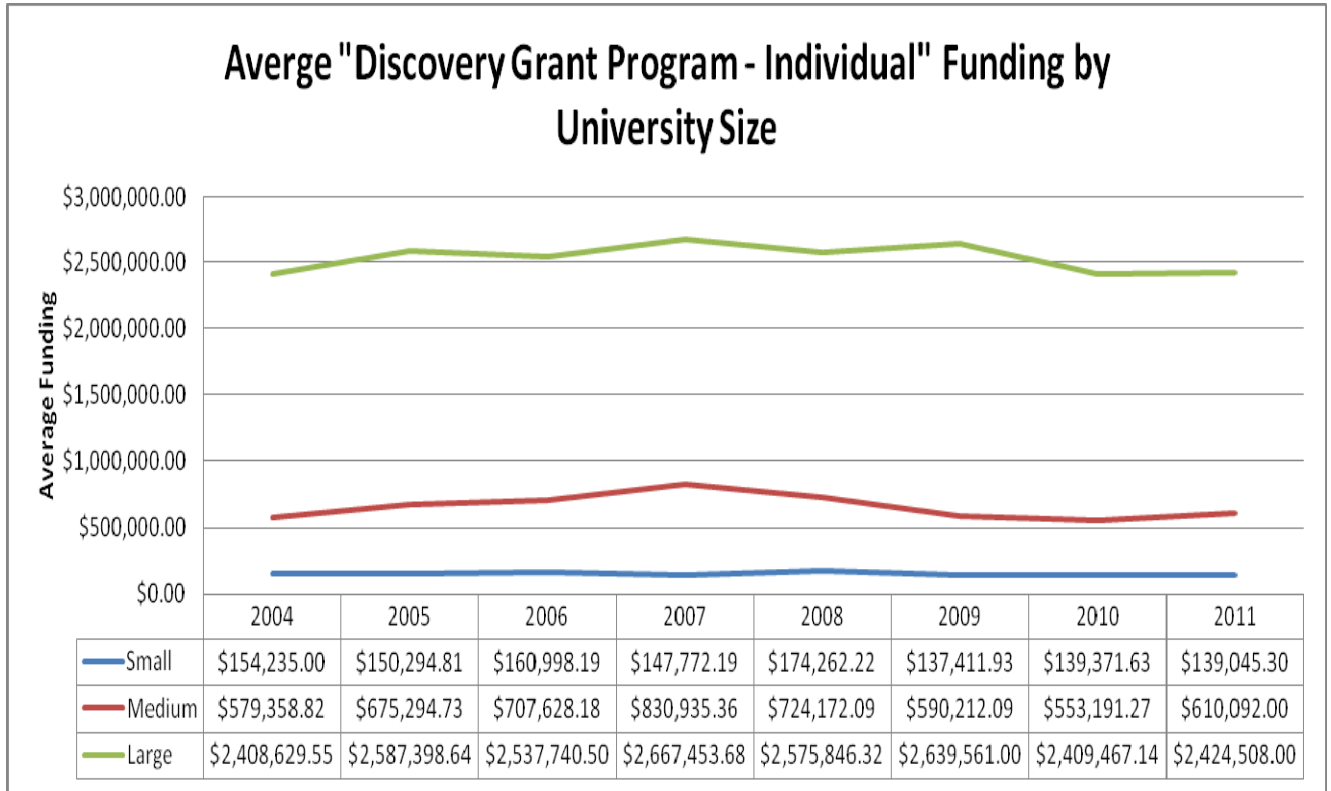
University Size	Average Funding 2004-2008	Average Funding 2009-2011	Difference	%	t	df	Sig
Small	400,988.19	335,433.80	-65,554.39	-16%	3.032	31	.005
Medium	2,772,690.71	2,646,862.90	-125,827.82	-4.5%	.390	15	.702
Large	6,113,356.12	5,995,034.47	-118,321.64	-1.9%	.645	11	.532

Figure 5:



University Size	Average Funding 2004-2008	Average Funding 2009-2011	Difference	%	t	df	Sig
Small	164,894.84	147,083.19	-17,811.65	-11%	1.458	26	.157
Medium	730,183.16	643,064.09	-87,119.07	-12%	2.942	10	.015
Large	2,659,774.42	2,712,392.17	52,617.75	1.9%	-.870	20	.395

Figure 6:



University Size	Average Funding 2004-2008	Average Funding 2009-2011	Difference	t	df	Sig
Small	\$157,512.4815	\$138,609.6173	-18,902.86	1.519	26	.141
Medium	\$703,477.8364	\$584,498.4545	-118,979.38	3.770	10	.004
Large	\$2,555,413.7364	\$2,491,178.7121	-64,235.02	1.226	21	.234

Figure 7:

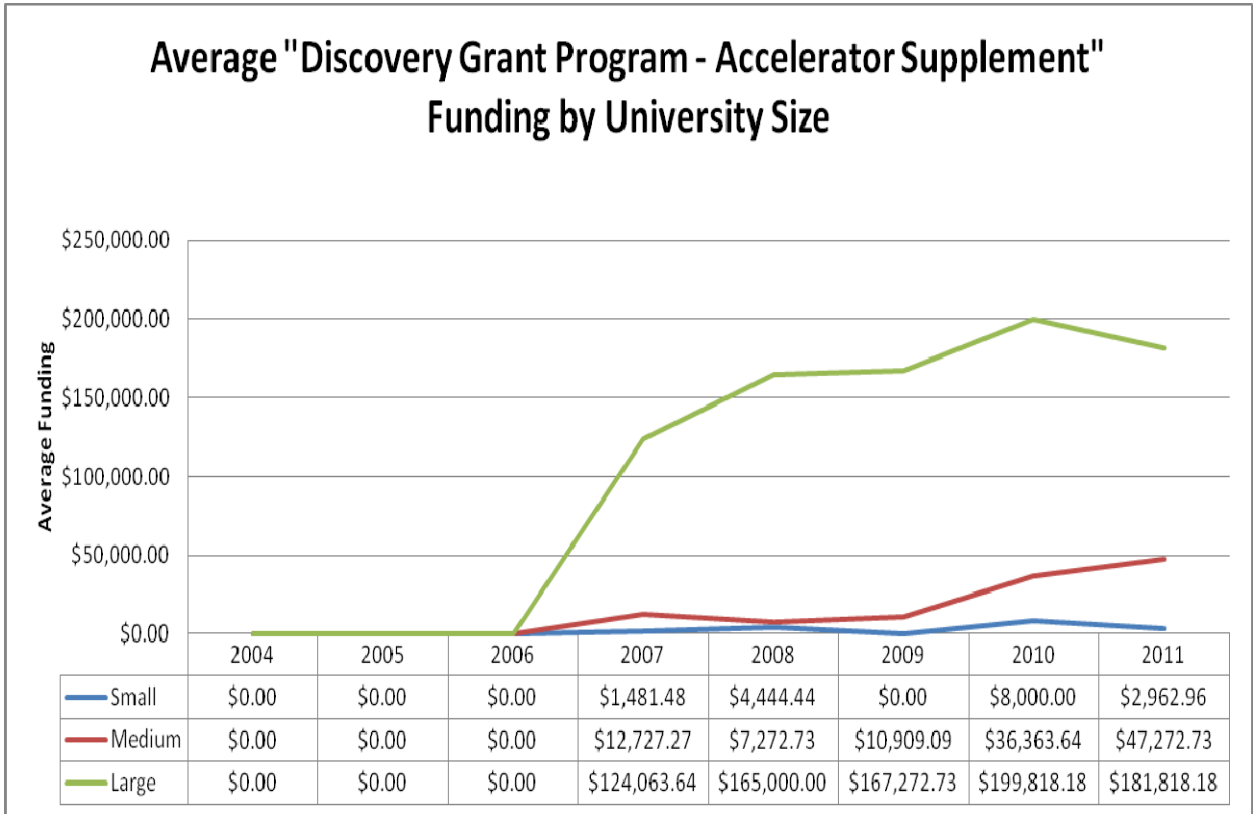
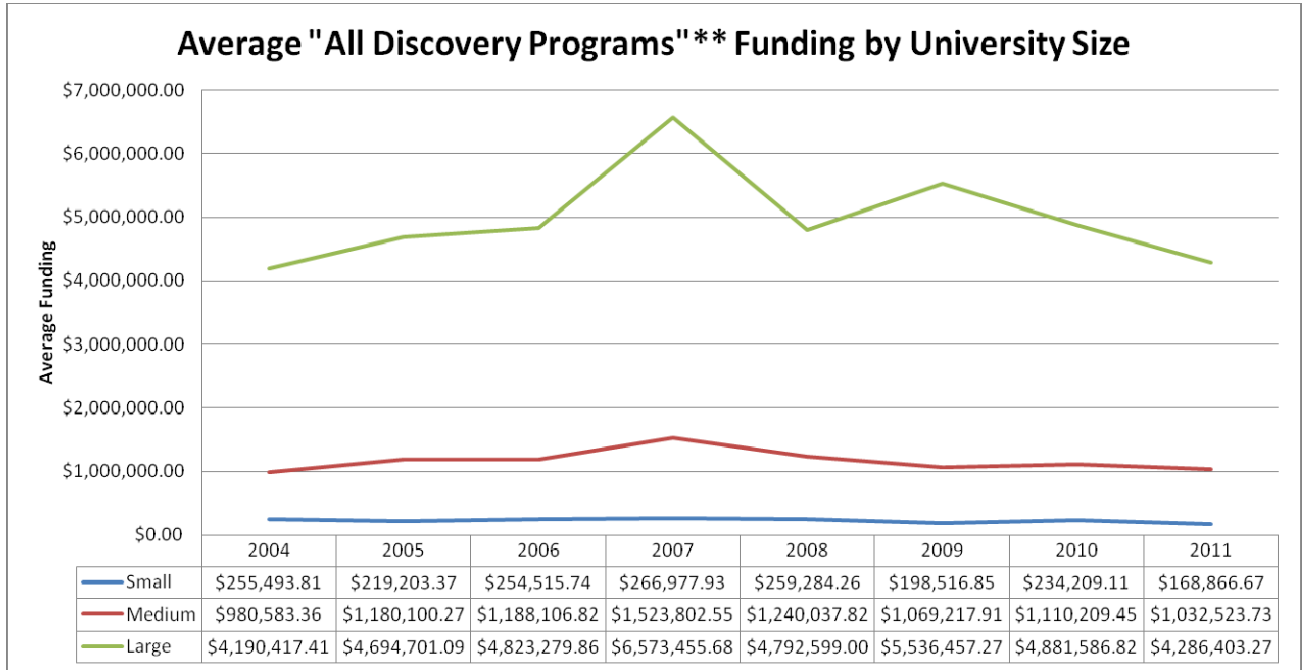


Figure 8:



University Size	Average Funding 2004-2008	Average Funding 2009-2011	Difference	%	t	df	Sig
Small	251,095.02	200,530.88	-50,564.15	-20%	2.441	26	.022
Medium	1,222,526.16	1,070,650.36	-151,875.80	-12%	3.251	10	.009
Large	5,014,890.61	4,901,482.45	-113,408.15	-2.3%	.451	21	.657

6. Summary

Regardless of whether data in terms of Full Time Enrolment or Total NSERC funding are used to determine University Size, or whether All Discovery Programs or Discovery Grants only are examined, small and medium sized universities have received a smaller percentage of the total funding in the 2009-2011 cycle than they did in the 2004-2008 cycle and less funding per year. Differences in geographical distribution are not so clear: when all Discovery Programs are examined, only Alberta and Saskatchewan received more funding in 2009-2011 than they did in 2004-2008. If only Discovery Grants are examined, British Columbia, Ontario and Quebec received more funding in 2009-2011 than they did in 2004-2008. However amongst the six provinces that receive less than 5% of total NSERC funding each, 5 of the six saw a decrease in both Discovery Programs and Discovery Grants funding – the only exception being Saskatchewan.

Acknowledgments

The CAP is grateful for funding assistance for this project from the Office of the Vice-President (Research) at the University of Winnipeg.

7. References

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