Michael Smith Foundation for
Health Research

Personnel Programs Review
Career Investigator Program
Background Information

Report prepared by
Carey Hill
Rashmita Salvi
Valerie To
Helen Evans
Gitta Oldendorff
Amy Tipton Johnson

Corporate Services and Programs
MSFHR

February 2008

Michael Smith Foundation for Health Research

Personnel Programs Review
Career Investigator Program
Background Information

Table of Contents

Brief Overview

The purpose of this document is

- to provide a brief overview of the Career Investigator Program;
- to present a summary of findings; and
- to provide more detailed information about the Career Investigator Program awards and award recipients between 2001 and 2006.

The Career Investigator Program provides awards to support the career development of researchers from the Scholar through to the Senior Scholar level. The program was created in 2001 to improve BC's ability to attract, support and retain outstanding health researchers. The program provides salary awards to scholars who agree to devote 75 percent of their time to health research activities. Applicants to the program must be Canadian citizens or have permanent residency, hold PhDs or the equivalent including DDS, DVM, DPharm or MD, and must conduct research in one of the four health research themes originally defined by the Canadian Institutes of Health Research (CIHR).

Applicants to the Career Investigator Program are classified along two dimensions: investigator level and research theme (see Figure 1). For the dimension, investigator level, there are currently two categories of Career Investigator awards: Scholar and Senior Scholar. Originally, there were three categories including a Distinguished Scholar category. The Distinguished Scholar category included those researchers with at least 10 years independent research experience who were established, internationally recognized scientific leaders in their field of study. In 2004, the Distinguished Scholars award was discontinued as MSFHR changed its focus to supporting researchers at an earlier stage of career development.

Scholar applicants include those researchers with less than 5 years of independent research experience. The Senior Scholar category includes those researchers with less than ten years independent research experience. For both award categories, the host institutions have specific requirements. For Scholars and Senior Scholars, the host institution must specify how the funds freed up by the MSFHR Career Award will be used, for example towards the award recipients' research program and/or protection of 75 percent research time. In addition, for Scholars, the host institution must commit to offering a full-time academic appointment which is, at minimum, as an Assistant Professor or the equivalent. For Senior Scholars, the host institution must submit a written commitment confirming an additional five (5) years of salary support comparable to the MSFHR Senior Scholar award after the completion of the Senior Scholar award.

Figure 1: Career Investigator Program Classifications

	Biomedical Research theme/pillar	Clinical Research theme/pillar	Health Services Research theme/pillar	Population Health Research theme/pillar
Scholar				
Senior Scholar				
Distinguished Scholar (discontinued)				

For the other dimension, research theme, applicants classify themselves into one of four research themes defined by the Canadian Institutes of Health Research (CIHR).The original CIHR health research themes include biomedical, clinical, health services research and population health research.

- The biomedical theme involves research that seeks to understand normal and abnormal human functioning, at the molecular, cellular, organ system and whole body levels. This theme includes the development of tools and techniques to be applied for this purpose; developing new therapies or devices which improve health or the quality of life of individuals, up to the point where they are tested on human subjects; and studies on human subjects that do not have a diagnostic or therapeutic orientation.
- The clinical research theme involves research that seeks to improve the diagnosis, and treatment (including rehabilitation and palliation), of disease and injury; and improve the health and quality of life of individuals as they pass through normal life stages. Clinical research is research on, or for the treatment of, patients.
- The health services research theme involves research that seeks to improve the efficiency and effectiveness of health professionals and the health care system, through changes to practice and policy. Health services research is a multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies, and personal behaviors affect access to health care, the quality and cost of health care, and ultimately our health and well-being.
- The population health research theme involves research that seeks to improve the health of the Canadian population, or of defined sub-populations, through a better understanding of the ways in which social, cultural, environmental, occupational, and economic factors determine health status.

MSFHR Career Investigator Awards consist of a salary award and may include an establishment grant. For Scholars, the salary award is valued at $80,000 per year for six years inclusive of benefits. For the Senior Scholar, the salary award is valued at $100,000 per year for five years, inclusive of benefits. In addition to the salary award, the establishment grant is a set of funds for the researcher to use to start-up their laboratories and/or career. The intent of the Establishment Grant is to provide the investigators with reasonable start-up funds for the development of their proposed research programs/projects and/or laboratories. The MSFHR contributions are intended to be supplemental to, not in place of, the host organization's commitment to the provision of appropriate start-up funds and infrastructure support for the researchers. The base establishment grant is up to $75,000 over two years. Funded Scholars may be eligible for matching funds up to an additional $50,000 over two years and Senior Scholars may be eligible for matching funds up to an additional $75,000 over two years.

Table 1: Career Investigator Program Award Amounts and Durations

	Experience	Salary Award (per year)	Establishment Grant(one-time)	Award duration (years)
Scholars	<5 years independent research	$80,000	$75,000 + $50,000 matching (one-time)	6
Senior Scholars	<10 years independent research	$100,000	$75,000 + $75,000 matching (one-time)	5

Historical evolution of the program: Changes to the Guidelines

Over the 6 years of the program, several changes have been made to the award categories, eligibility criteria, and award funding amounts and durations.

One of the major changes to the award categories involved the Distinguished Scholar award. It was discontinued in 2004.

In terms of eligibility criteria, pre-requisites were put in place in 2001 allowing no breaks in salary support since the first appointment. Application limits were introduced limiting applicants to two consecutive attempts at each award level. In 2001, Canada Research Chairs were eligible to apply. Applicants were required to commit 75 percent of their time to research thus excluding applicants with major administrative responsibilities. In 2004, Canada Research Chairs were no longer eligible to apply. In 2005, continuous salary support was no longer required and application limits at each award level were removed. Tier 2 (but not Tier 1) Canada Research Chairs were now eligible to apply.

In terms of the funding duration and amounts, funding amounts were specified at each level in 2001 (see Table 4 for more details) and establishment grants were introduced. In 2005, the funding duration for Scholars was increased to 6 years and the bridging award that was provided to Scholars for 1 year after their 5 years of award was discontinued. In addition, host institutions were required to commit to 5 years of support post MSFHR Senior Scholar awards.

Table 2: Career Investigators – Changes to the Award categories

Year	Award categories	Definition
2001	Scholar	Less than 5 yrs. Of independent research experience
	Senior Scholar	Less than 10 years of independent research experience
	Distinguished Scholar	Over 10 yrs of independent research experience
2004	Discontinued Distinguished Scholar	

Table 3: Career Investigators – Changes to the Eligibility Criteria

Year	Criteria	Description/Changes
2001	Pre-requisites	No break in salary support since first appointment
	Application limits	Limit to 2 consecutive attempts at each award level
	Canada Research Chairs	Tier 1 and 2 are eligible to apply
	75% research time	Excluded applicants with major administrative responsibilities
2004	Canada Research Chairs	Tier 1 and 2 are not eligible to apply
2005	Pre-requisites	Continuous salary support not required
	Application attempts	Remove application limits at each award level
	Canada Research Chairs	Tier 1 not eligible Tier 2 eligible

Table 4: Career Investigators – Changes to the funding duration and amounts

Year	Award categories	Definitions and changes
2001	Scholar	$80,000 salary contributions 5 years, plus one year bridging award
	Senior Scholar	$100,000 salary contributions $75,000/2 year Establishment grant for new faculty members and non-BC applicants; $75,000 matching fund available 5 years
	Distinguished Scholar	$120,000 salary contributions $75,000/2 year Establishment grant for new scholars and non-BC applicants; $75,000 matching fund available 5 years
	Top-up and Incentive Awards	Holders of other peer review awards are topped up to MSFHR level. Awardees receive 30% of the external award to a maximum of $15,000
	Establishment Grants	$75,000/2 year based Establishment grant for new faculty members and new recruits to BC $50,000 matching funds for Scholars $75,000 matching funds for Senior Scholars
2004	Distinguished Scholar	Discontinued award
2005	Scholar	Increased to 6 years, discontinued bridging award
	Senior Scholar	Host institutions required to commit to 5 years of support post MSFHR Senior Scholar award

Summary of Findings

The remainder of this document provides detailed information about the Career Investigator awards and award recipients between 2001 and 2007.

The Career Investigator Program has received 816 applications from its inception to 2007. From May 2001 through November 2006, the program has funded a total of 243 awards including 161 Scholars, 69 Senior Scholars and 13 Distinguished Scholars. The value of the awards issued for the Career Investigator Program from May 2001 through to the November 2006 competitions is $82,641,944.

More men than women have been funded by the Career Investigator Program. In the Scholar category, 60 percent of funded Scholars were male with 68 percent of funded Senior Scholars and 77 percent of Distinguished Scholars being male. This demonstrates that with increasing career progression there are fewer women, a perpetuation of the trend noted with the research trainees. Nevertheless, success ratios demonstrate that based on the number of applications by women, the observed are equal to the expected when all competitions are taken into account.

In terms of institutions, the University of British Columbia has been the greatest recipient of MSFHR's Career Investigator Program. Applicants from Simon Fraser and the University of Victoria have also been successful. The University of Northern British Columbia has entered the competitions five times but has not been successful. Thompson Rivers University is the only small university that has been successful in a Scholar competition.

Of the 221 researchers in the May 2001 through November 2006 competitions, 80 percent of researchers received Tri-Council funding either concurrently to their MSFHR award (i.e. commencing before and continuing into the duration of) or on/after commencement of their MSFHR award. In total, MSFHR-funded researchers were awarded $103,969,447 in Tri-Council funds concurrently or after commencement of their MSFHR award. It should be noted that scholars who did not win CIHR awards may have been successful in receiving awards from other agencies.

The program does not engage those clinicians who spend a significant amount of time performing clinical work. Practicing health professionals who perform any clinical work accounted for 14.7 percent of applicants. From 2001 through 2006, MSFHR funded 42 practicing health professionals or about 17 percent of funded Career Investigators. In this case, practicing refers to any clinical work.

Overall, the Career Investigator Program has supported the recruitment of 63 non-BC residents to British Columbia. This accounts for 26 percent of funded Career Investigators. New recruits come from as close as Alberta and Washington State and as far away as Germany.

From 2001 through 2005, 95.4 percent of awardees have remained in British Columbia. Nine of 194 awardees have left the province for other research locations.

Consideration of successful applicants who apply to the next level of award offers a measure of success of the program as these applicants must again submit to the rigour of the peer review process. Overall, of the 14 Scholars who applied to the Senior Scholar competition in November 2005, 10 were successful (70 percent). Of the 17 Scholars who applied to the Senior Scholar competition in November 2006, 11 were successful (about 65 percent).

Since the November 2001 competition, most Career Investigators who were eligible for the establishment grant took it up. Similarly, most of those Career Investigators who received the base establishment grant took up the matching grant. Host institutions were required to match 2:1.

1. What is the value of the awards issued per competition?

The value of the awards issued for the Career Investigator Program since its inception is $82,641,944. This amount includes reductions for national funding, early terminations or declines, and is based on the committed salary amounts and the establishment grant amounts per award, where applicable. The average value of the awards per competition is $11,805,992. The value of awards per competition has ranged from $9,108,875 in November 2005 compared with $15,230,748 in May 2001.

Table 5: Value of the MSFHR Career Investigator Program Awards

Competition Year	Value of Awards
May-01	$15,230,748
Nov-01	$11,266,585
Nov-02	$11,788,511
Nov-03	$11,463,932
Nov-04	$11,360,571
Nov-05	$9,108,875
Nov-06	$12,422,722
Total	**$82,641,944**

2. How many applications does the program receive per competition?

Applications to the Career Investigator program have a deadline of November each year. To date, MSFHR has received 816 applications for Career Investigator competitions. The Scholar category received 572 applications with 195 in the Senior Scholar category and 49 in the Distinguished Scholar category.

It is important to note that the May 2001 competition is included in the tables for reference but is not included in the graph or graphs that follow as it was atypical.

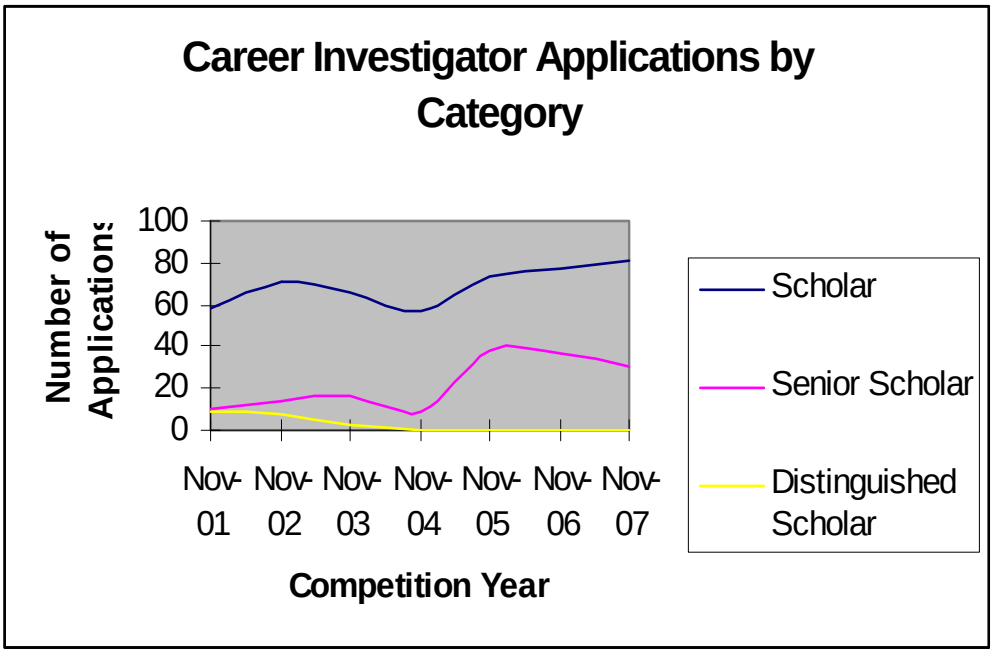


Table 6: Career Investigator Applications by Category

	May-01	Nov-01	Nov-02	Nov-03	Nov-04	Nov-05	Nov-06	Nov-07	Total	Percent of Total
Scholar	88	58	71	66	57	74	77	81	572	70%
Senior Scholar	39	10	14	17	9	38	37	31	195	23.8%
Distinguished Scholar	30	9	7	3	n/a	n/a	n/a	n/a	49	6%
Total	157	77	92	86	66	112	114	112	816	99.8%

*Tally may not equal 100% due to rounding.

Applications by Research Theme to the Scholar Category

The Scholar category includes those researchers with less than five years independent research experience. The Scholar category has received 572 applications over eight competitions. This accounts for 70 percent of all applications. On average, about 72 applications have been received for the Scholar category each competition. The biomedical research theme has consistently received the most applications per competition when compared with the other research themes. Applications for the biomedical category have ranged from 20 in November 2004 to 47 in May 2001. With the exception of two years, the clinical research theme has received the second highest number of applications per competition. Applications to the clinical research theme have ranged from 12 in November 2004 to 25 in November 2005. The health services research theme has received the fewest applications overall (n=85). Applications to the health services theme have ranged from 5 in November 2002 to 16 in November 2004 (and May 2001). The population health category has received 8 applications in November 2001 compared with 20 applications in November 2006.

When applications are considered in relation to the 2001 competition year, it is evident that the population health theme experienced the greatest percent change in 2006. The clinical research theme has also undergone some significant change, particularly in 2002 and 2005. While the biomedical theme has received the greatest numbers of applications, it has done so consistently and there has been little increase.

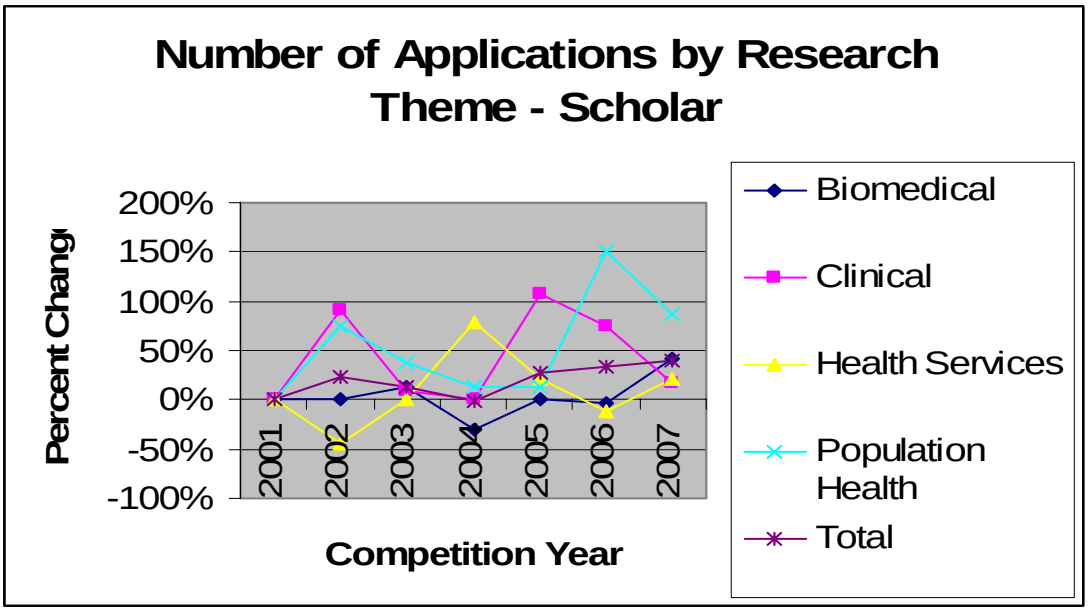


Table 7: Number of Applications by Research Theme – Scholar

	May-01	Nov-01	Nov-02	Nov-03	Nov-04	Nov-05	Nov-06	Nov-07	Total	Percent of Total
Biomedical	47	29	29	33	20	29	28	41	256	44.7%
Clinical	13	12	23	13	12	25	21	14	133	23.2%
Health Services	16	9	5	9	16	11	8	11	85	14.8%
Population Health	12	8	14	11	9	9	20	15	98	17.1%
Total	88	58	71	66	57	74	77	81	572	99.8%

*Tally may not equal 100% due to rounding.

Applications by Research Theme to the Senior Scholar Category

The Senior Scholar category includes those researchers with less than ten years independent research experience. Over the past eight competitions, 195 applications have been received for the Senior Scholar category. This accounts for 23.8 percent of all applications. With the exception of one competition, the biomedical research theme has received the most applications on a per competition basis. The second highest number of applications overall have been received by the clinical research theme (n=39) with the third by the population health theme (n=33) and fourth by the health services research theme (n=26). On average, 24 applications have been received per competition for the Senior Scholar category. Applications to the biomedical theme have ranged from 2 in November 2004 to 22 in May 2001. Applications to the clinical research theme have ranged from 2 in November 2001 (through November 2004) to 9 in November 2006. Applications to the population health research theme have ranged from 2 in November 2001 to 6 in November 2006 (and May 2001 and November 2003). Applications to the health services research theme have ranged from 0 in November 2001 to 7 in November 2007. The varying number of applications is reflective of changes to the program guidelines which, at times, reduced, and, at times, increased the number of eligible applicants to the competitions.

When applications are considered in relation to the 2001 competition year, the health services research theme has experienced the greatest percent change. Applications to the clinical research theme were on the increase from 2004 to 2005 as was the biomedical research theme. Applications to the population health research theme have been declining since 2005.

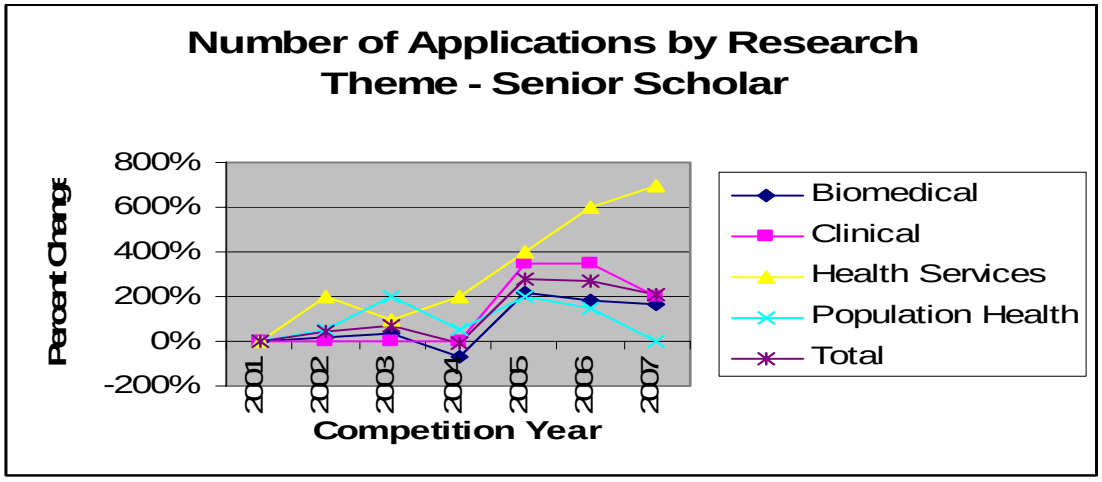


Table 8: Number of Applications by Research Theme – Senior Scholar

	May-01	Nov-01	Nov-02	Nov-03	Nov-04	Nov-05	Nov-06	Nov-07	Total	Percent of Total
Biomedical	22	6	7	8	2	19	17	16	97	49.7%
Clinical	7	2	2	2	2	9	9	6	39	20%
Health Services	4	0	2	1	2	4	6	7	26	13.3%
Population Health	6	2	3	6	3	6	5	2	33	16.9%
Total	39	10	14	17	9	38	37	31	195	99.9%

*Tally may not equal 100% due to rounding.

Applications by Research Theme to the Distinguished Scholar Category

The Distinguished Scholar category supported researchers with more than ten years of independent research experience. Forty-nine potential distinguished scholars applied to the program from May 2001 through November 2003. The biomedical category involved the greatest number of applicants with 61 percent of all applicants while the clinical theme included 16 percent of applicants. The population health theme included 14 percent of applicants, and the health services research theme included 8 percent. It is notable that only one competition, in May 2001, received applications to the health services research theme. Moreover, there is limited ability to make a trend assessment due to the small numbers of applicants and competitions.

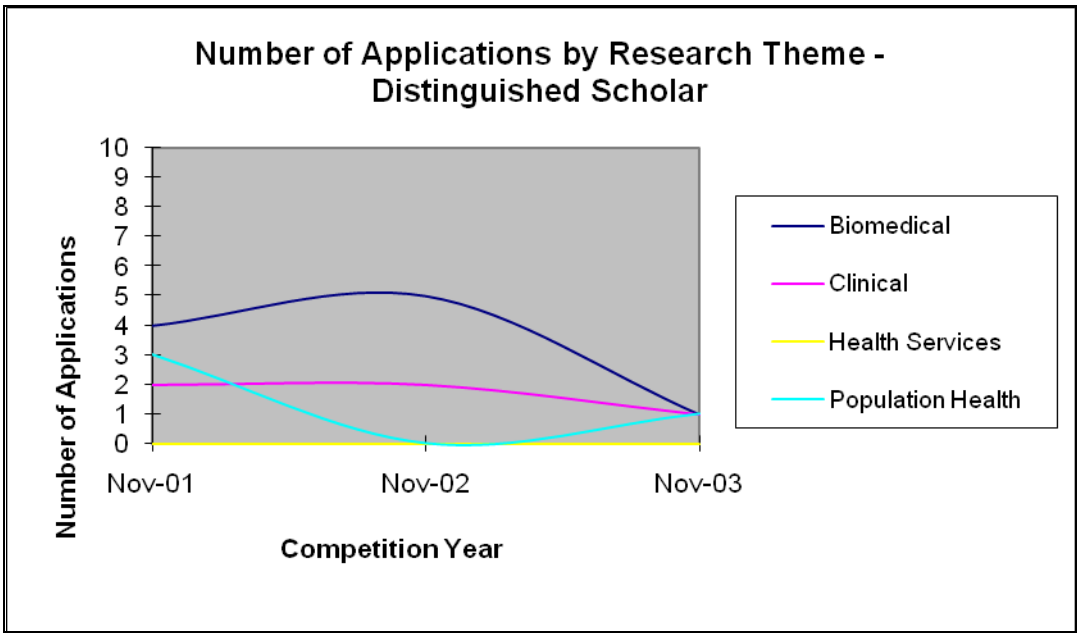


Table 9: Number of Applications by Research Theme – Distinguished Scholar

Competition	May-01	Nov-01	Nov-02	Nov-03	Total	Percent of Total
Biomedical	20	4	5	1	30	61.2%
Clinical	3	2	2	1	8	16.3%
Health Services	4	0	0	0	4	8.2%
Population Health	3	3	0	1	7	14.3%
Total	30	9	7	3	49	100%

3. What are the success rates of applicants to the Career Investigator Program?

For the Career Investigator Program, success rates are determined by a variety of guiding principles including the following:

- aim for a minimum of 25 percent success rate per category and research theme;
- financial off-sets from national funding;
- scientific breaks in the rating;
- recommendations from the Chairs of the Evaluation Committees, and
- budgetary considerations.

In reality, success rates range from zero to one hundred percent reflecting the low numbers of applicants to some competitions and the variety of factors used in the determination of the success rates.

Table 10: Success Rates by Research Theme - Scholars

	May-01	Nov-01	Nov-02	Nov-03	Nov-04	Nov-05	Nov-06	Nov-07
Biomedical	23%	21%	38%	45%	40%	38%	36%	33%
Clinical	23%	33%	30%	31%	42%	28%	29%	31%
Health Services	19%	67%	20%	33%	38%	27%	38%	40%
Population Health	8%	63%	29%	36%	44%	44%	30%	25%

Table 11: Success Rates by Research Theme – Senior Scholars

	May-01	Nov-01	Nov-02	Nov-03	Nov-04	Nov-05	Nov-06	Nov-07
Biomedical	18%	50%	14%	38%	50%	53%	65%	47%
Clinical	29%	0%	50%	50%	0%	56%	67%	40%
Health Services	0%	n/a	0%	0%	100%	50%	67%	43%
Population Health	17%	100%	33%	33%	67%	33%	60%	50%

Table 12: Success Rates by Research Theme – Distinguished Scholars

	May-01	Nov-01	Nov-02	Nov-03
Biomedical	20%	0%	40%	0%
Clinical	33%	0%	50%	100%
Health Services	25%	n/a	n/a	n/a
Population Health	67%	33%	n/a	0%

4. How many Career Investigators does MSFHR support per competition?

Overall, the Career Investigator program has provided funding for 283 awards since its inception in May 2001. About two-thirds of these have been in the Scholar category. The Senior Scholar category accounts for 29 percent of awards. The Distinguished Scholar category was ended after the November 2003 competition, and accounts for close to 5 percent of awards since the inception of the program. The number of Scholar awardees has averaged 23 per competition. The number of Senior Scholar award recipients has ranged from 3 to 24 per competition. The number of Distinguished Scholar awardees has ranged from 1 to 8 per competition.

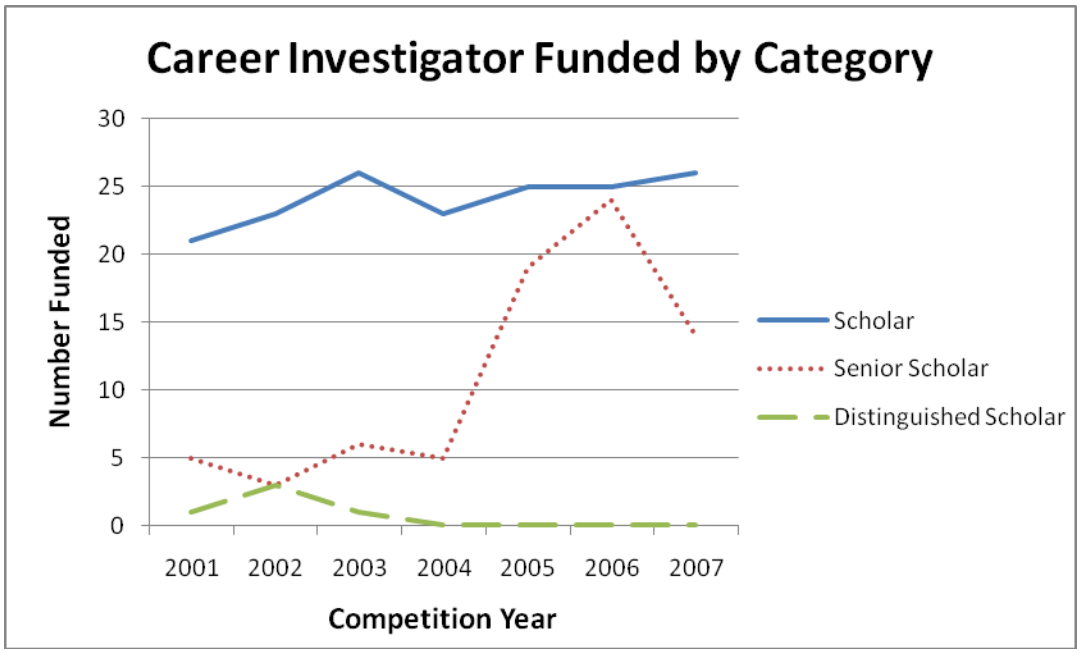


Table 13: Career Investigator Funded by Category

	May-01	Nov-01	Nov-02	Nov-03	Nov-04	Nov-05	Nov-06	Nov-07	Total	Percent of Total
Scholar	18	21	23	26	23	25	25	26	187	66.1%
Senior Scholar	7	5	3	6	5	19	24	14	83	29.3%
Distinguished Scholar	8	1	3	1	n/a	n/a	n/a	n/a	13	4.6%
Total	33	27	29	33	28	44	49	40	283	100%

Funded Scholars by Research Theme

The Scholar category has included 187 funded Scholars since May 2001. It is important to note that the numbers are generally small and the distribution trends should be interpreted with caution. The biomedical research theme has had the greatest number of funded Scholars at 46 percent. Funded Scholars in the biomedical category range from 6 in November 2001 to 15 in November 2003. The clinical category has the second highest number of funded Scholars at 21.9 percent with population health third at 16.6 percent. The health services research theme involved the least number of funded Scholars ranging from 1 in November 2002 to 6 in November 2004 (and November 2001).

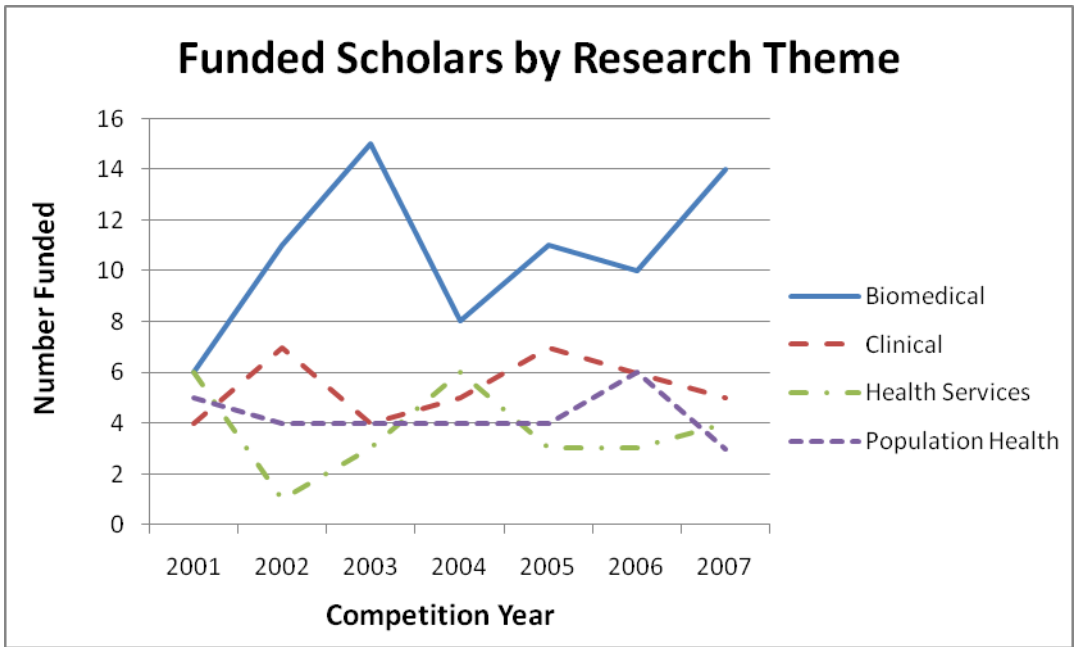


Table 14: Funded Scholars by Research Theme

	May-01	Nov-01	Nov-02	Nov-03	Nov-04	Nov-05	Nov-06	Nov-07	Total	Percent of Total
Biomedical	11	6	11	15	8	11	10	14	86	46%
Clinical	3	4	7	4	5	7	6	5	41	21.9%
Health Services	3	6	1	3	6	3	3	4	29	15.5%
Population Health	1	5	4	4	4	4	6	3	31	16.6%
Total	18	21	23	26	23	25	25	26	187	100%

Funded Senior Scholars by Research Theme

Since May 2001, 83 researchers have been funded in the Senior Scholar category. The biomedical research theme has the greatest number of funded Senior Scholars with 49.4 percent. In November 2005, there was an explosion in the number of funded applicants in the biomedical category with 10 funded Scholars compared with 1 the previous year. This is reflective of low application rates in the biomedical category in November 2004 (n=2) with a significant increase in 2005 (n=19). The clinical research theme also saw an explosion in funded Senior Scholars in November 2005 compared to zero the year before. This is reflective of low application rates in the clinical category in November 2004 (n=2) with a significant increase in 2005 (n=9). Moreover, it is reflective of the first cohort of Scholars coming back into the competition as Senior Scholars.

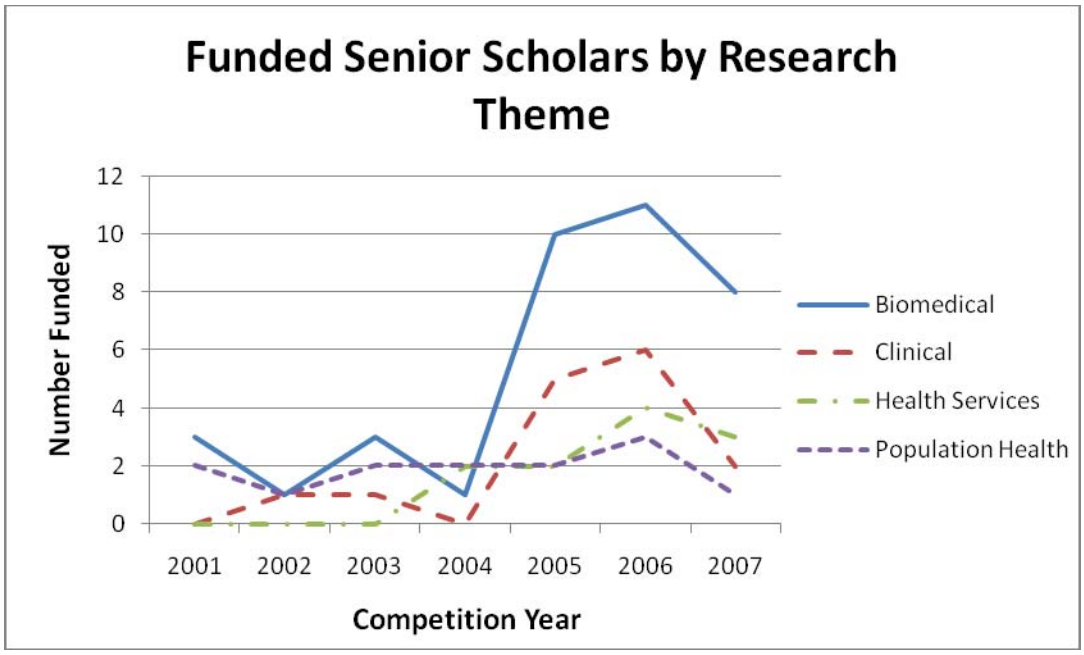


Table 15: Funded Senior Scholars by Research Theme

	May-01	Nov-01	Nov-02	Nov-03	Nov-04	Nov-05	Nov-06	Nov-07	Total	Percent of Total
Biomedical	4	3	1	3	1	10	11	8	41	49.4%
Clinical	2	0	1	1	0	5	6	2	17	20.5%
Health Services	0	0	0	0	2	2	4	3	11	13.3%
Population Health	1	2	1	2	2	2	3	1	14	16.9%
Total	7	5	3	6	5	19	24	14	83	100.1%

*Tally may not equal 100% due to rounding.

Funded Distinguished Scholars by Research Theme

The May 2001 competition awarded the greatest number of Distinguished Scholar awards. The number of Distinguished Scholar awards ranged from 1 in November 2001 (and 2003) to 8 in May 2001. It is worth noting that the health services research theme only received applications in the May 2001 competition. The Distinguished Scholar category was discontinued after the November 2003 competition. In that competition, only one Distinguished Scholar award was awarded.

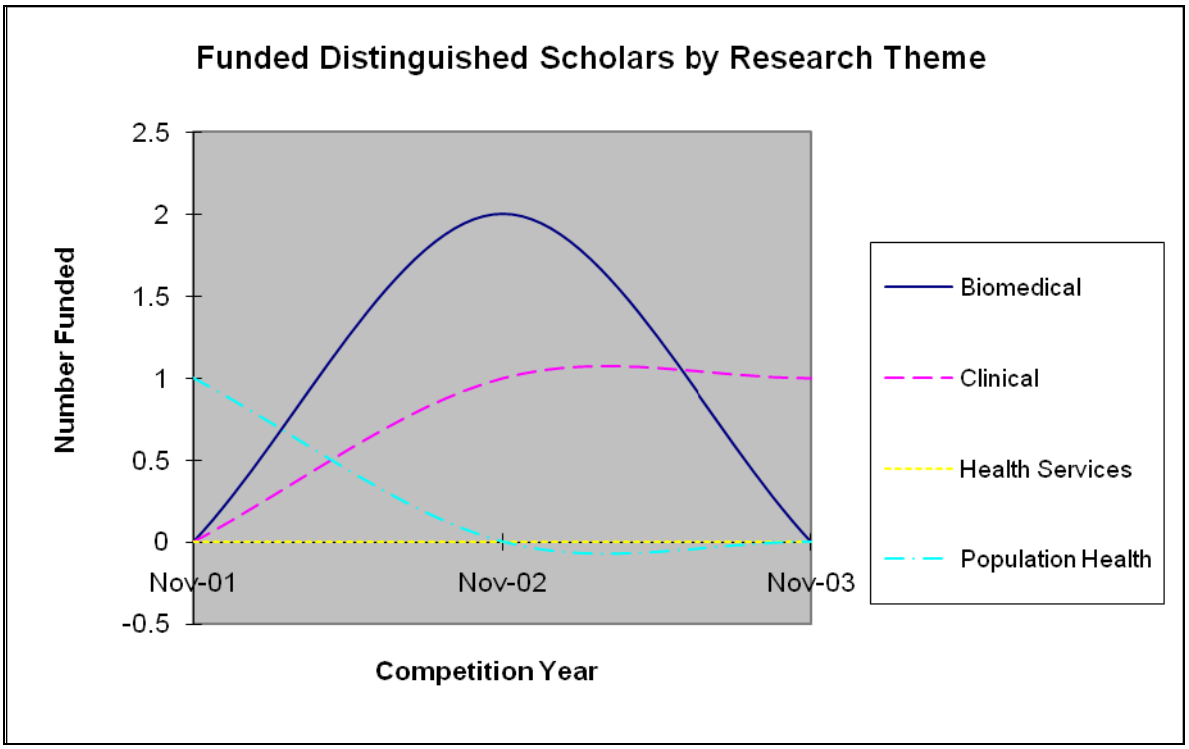
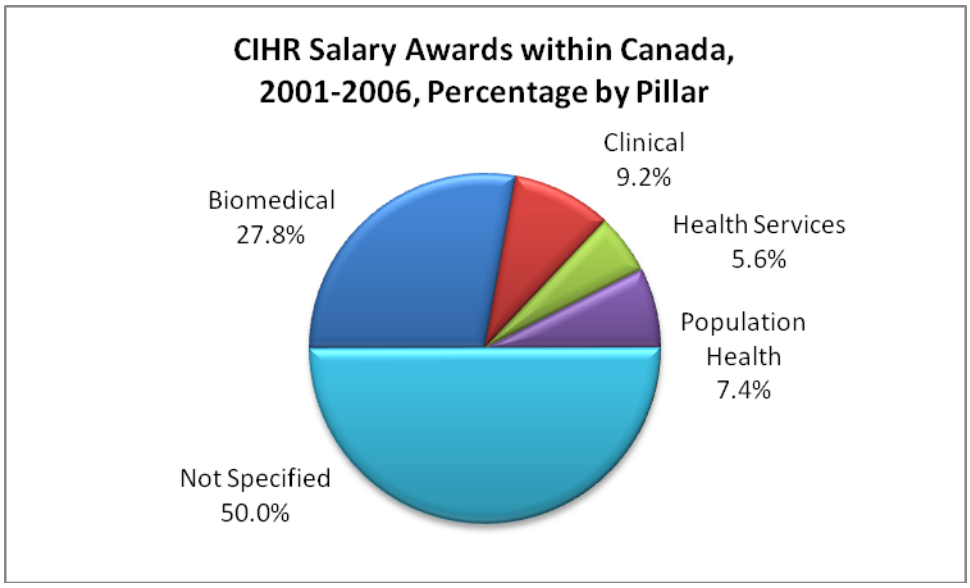


Table 16: Funded Distinguished Scholars by Research Theme

	May-01	Nov-01	Nov-02	Nov-03	Total	Percent of Total
Biomedical	4	0	2	0	6	46.1%
Clinical	1	0	1	1	3	23.1%
Health Services	1	0	0	0	1	7.7%
Population Health	2	1	0	0	3	23.1%
Total	8	1	3	1	13	100.0%

Comparing MSFHR Career Investigator Awards and CIHR Salary Awards

When MSFHR Career Investigator awards are compared with CIHR salary awards, a similar pattern emerges in terms of award distribution by theme. The biomedical research theme accounts for the most awards with the health services research theme accounting for the least. The clinical research theme has the second highest percentage of awards while population health is third. It is important to note that half of the CIHR salary awards fell in the "not specified" category.



5. Who does the Career Investigator award program support?

This section examines gender and institution paid to provide a better understanding of who the Career Investigator Program supports. With regards to gender, it demonstrates that with increasing career progression there are fewer women, a perpetuation of the trend noted with the research trainees.

Funded Scholars by Gender

In the Scholar category, 60 percent of funded Scholars were male. On average, 9 women received awards in each competition compared with 14 men.

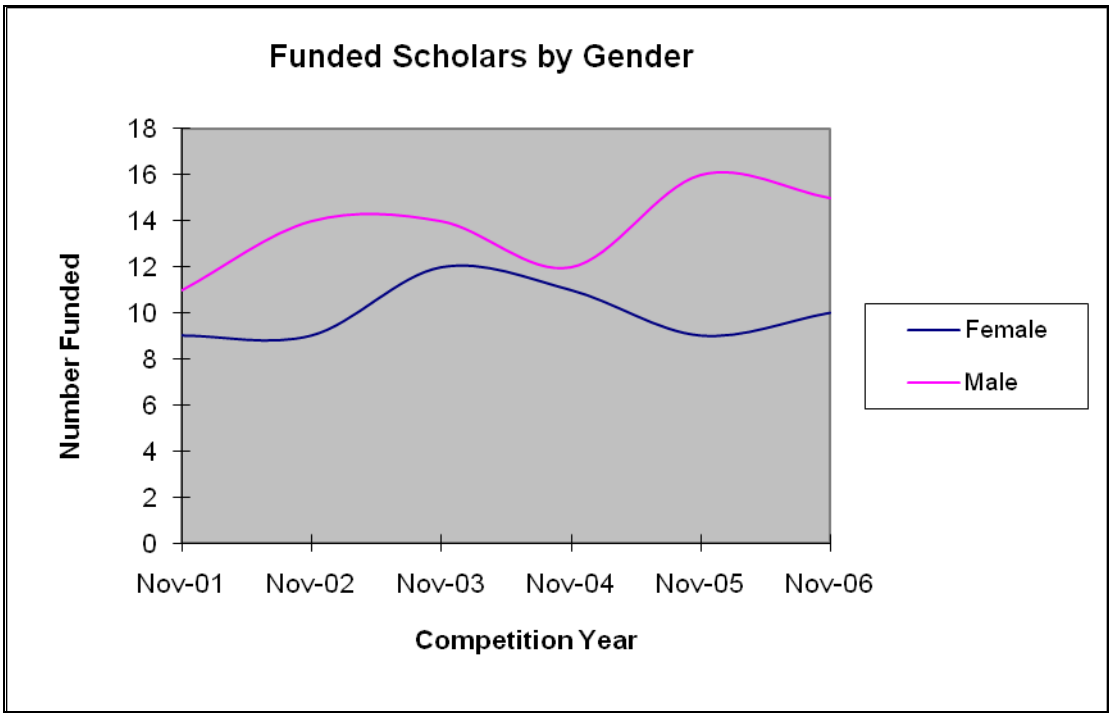


Table 17: Funded Scholars by Gender

	May-01	Nov-01	Nov-02	Nov-03	Nov-04	Nov-05	Nov-06	Total	Percent of Total
Female	4	9	9	12	11	9	10	64	40%
Male	14	11	14	14	12	16	15	96	60%
Total	18	20*	23	26	23	25	25	160	100%

Funded Senior Scholars by Gender

In the Senior Scholar category, 68 percent of awardees were male. The number of women receiving awards ranged from 1 in May 2001 to 9 in November 2006. The number of men receiving awards ranged from 1 in November 2002 (and 2004) to 17 in November 2005.

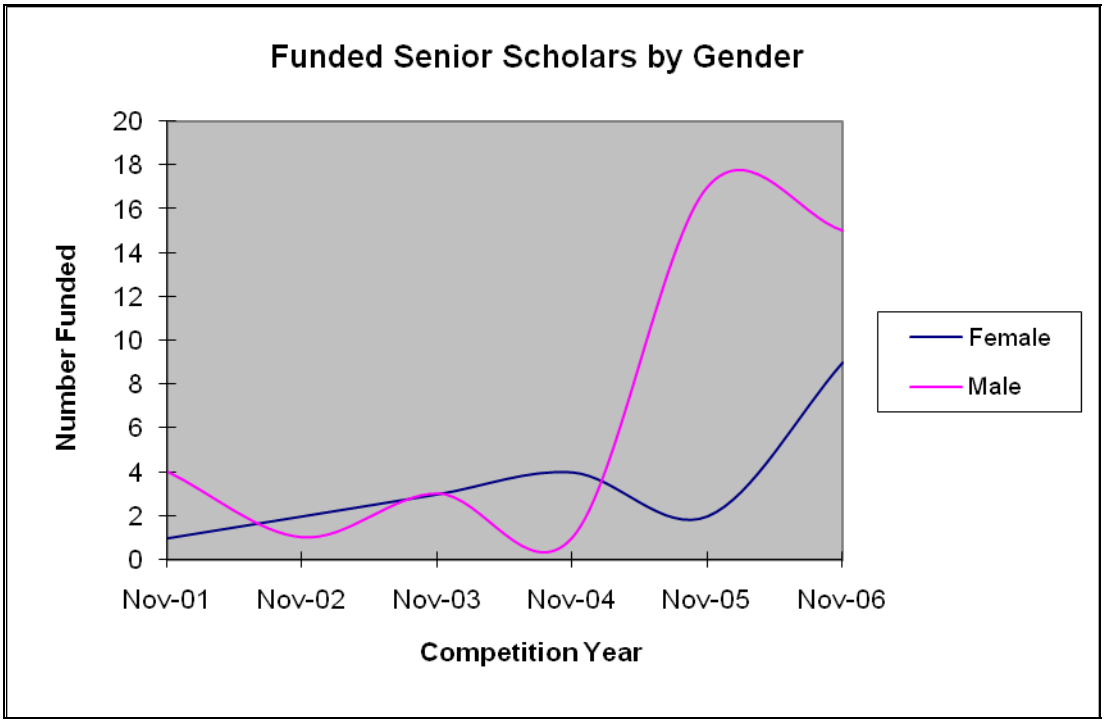


Table 18: Funded Senior Scholars by Gender

	May-01	Nov-01	Nov-02	Nov-03	Nov-04	Nov-05	Nov-06	Total	Percent of Total
Female	1	1	2	3	4	2	9	22	31.9%
Male	6	4	1	3	1	17	15	47	68.1%
Total	7	5	3	6	5	19	24	69	100%

Funded Distinguished Scholars by Gender

In the Distinguished Scholar category, 77 percent of awardees were male. Considering all competitions, the number of women ranged from zero to 2, while the number of men ranged from 1 to 6. When the more typical November competitions are considered (see graph below), the number of women ranges from 0 to 1 and the number of men from 1 to 2. The Distinguished Scholar category was discontinued after the November 2003 competition.

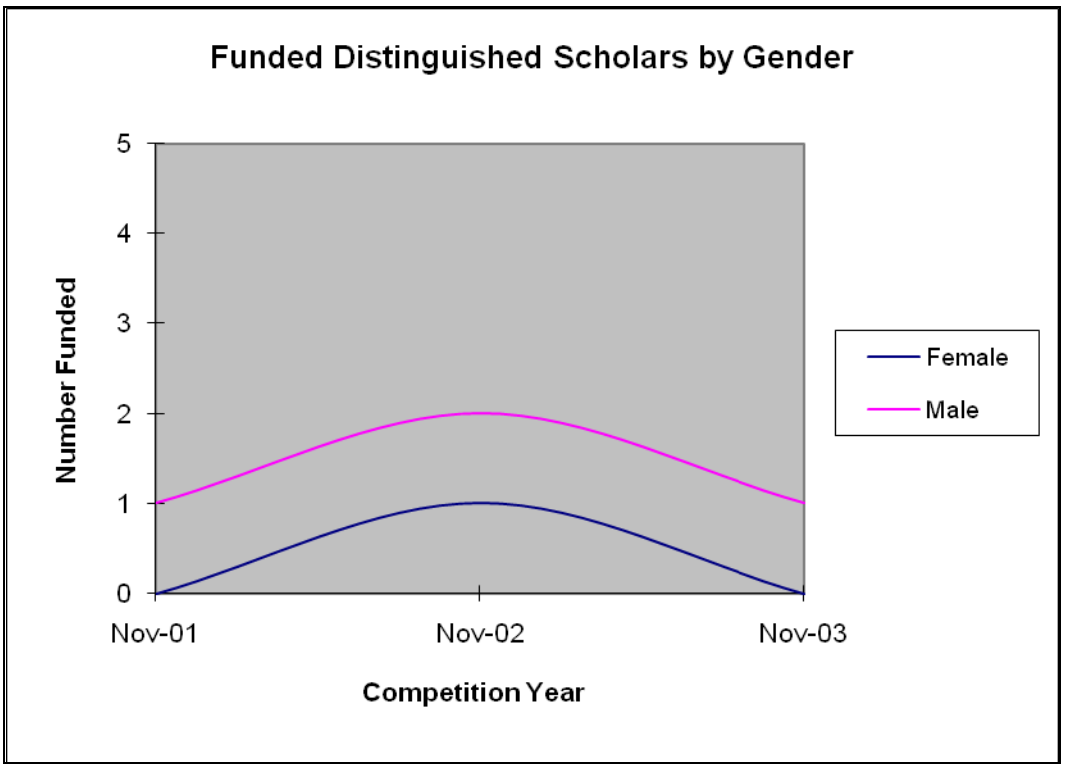
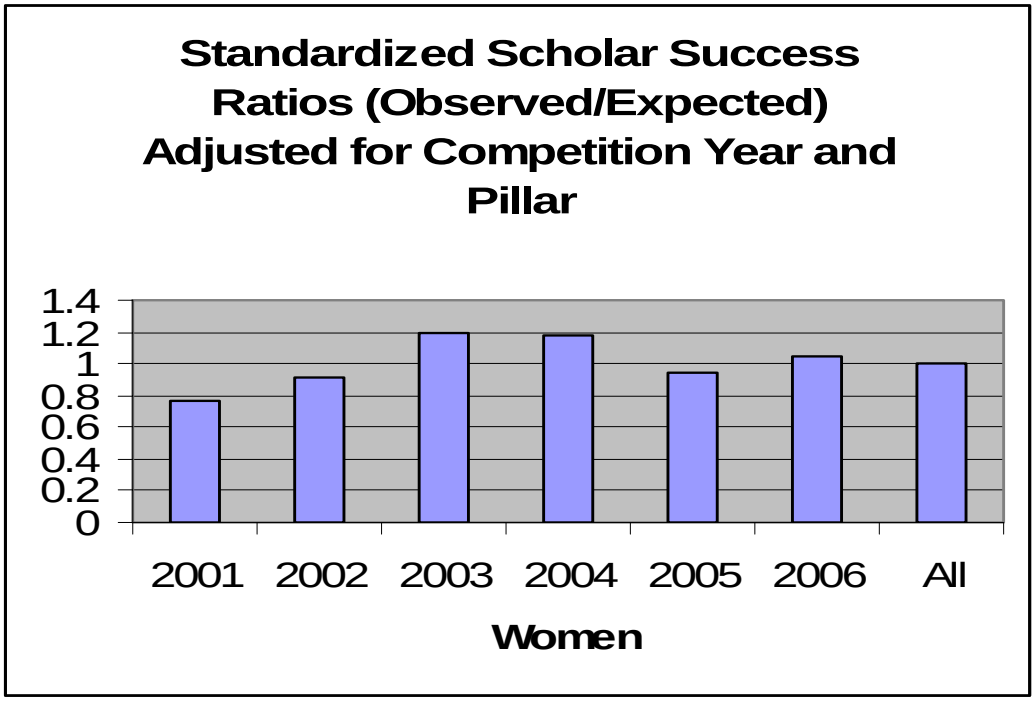
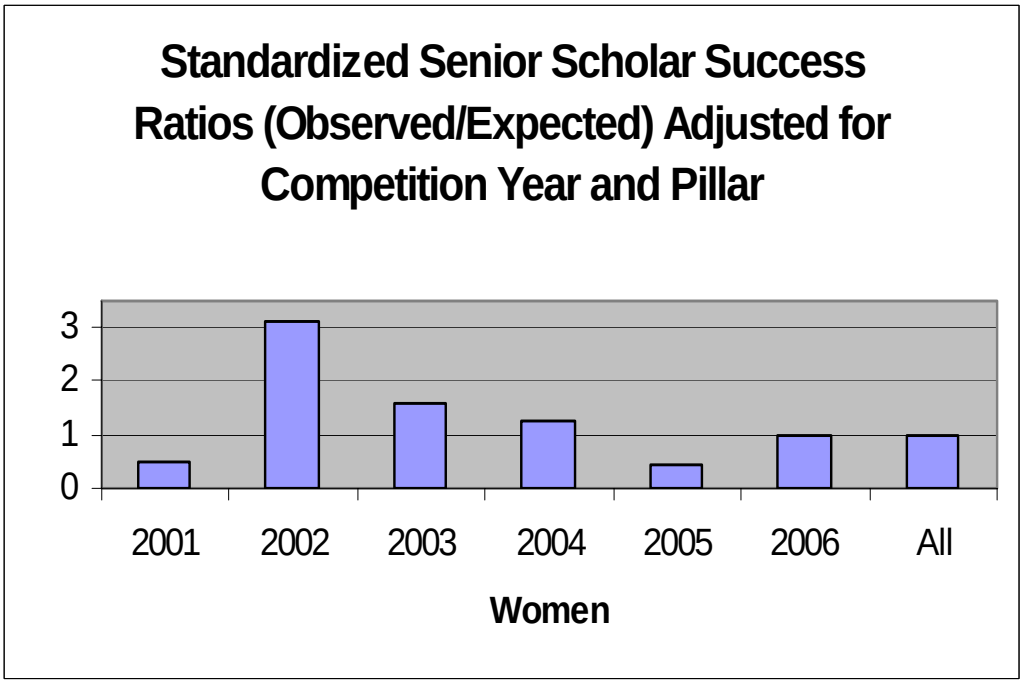


Table 19: Funded Distinguished Scholars by Gender

	May-01	Nov-01	Nov-02	Nov-03	Total	Percent of Total
Female	2	0	1	0	3	23%
Male	6	1	2	1	10	77%
Total	8	1	3	1	13	100%

While more men than women have been funded by the Career Investigator Program, the success rates of women provide information about whether the program is funding the number of women it would be expected to based on their application rates. The two graphs below provide standardized success ratios for the Scholar and Senior Scholar categories. The graphs demonstrate that when all competitions are taken into account the success ratio is 1.0 or the observed is equal to the expected for the Scholar category and 0.98 for the Senior Scholar category.


Standardized Scholar Success Ratios (Observed/Expected) Adjusted for Competition Year and Pillar
1.4
1.2
1
0.8
0.6
0.4
0.2
0
2001
2002
2003
2004
2005
2006
All
Women

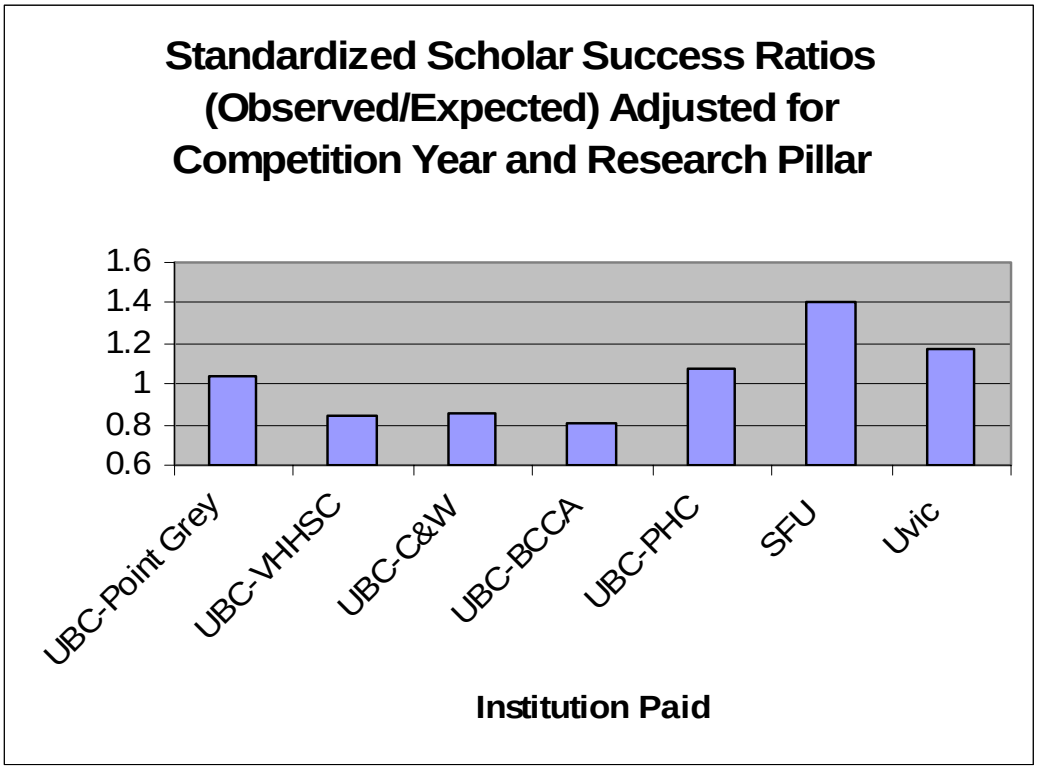

Standardized Senior Scholar Success Ratios (Observed/Expected) Adjusted for Competition Year and Pillar
3
2
1
0
2001
2002
2003
2004
2005
2006
All
Women

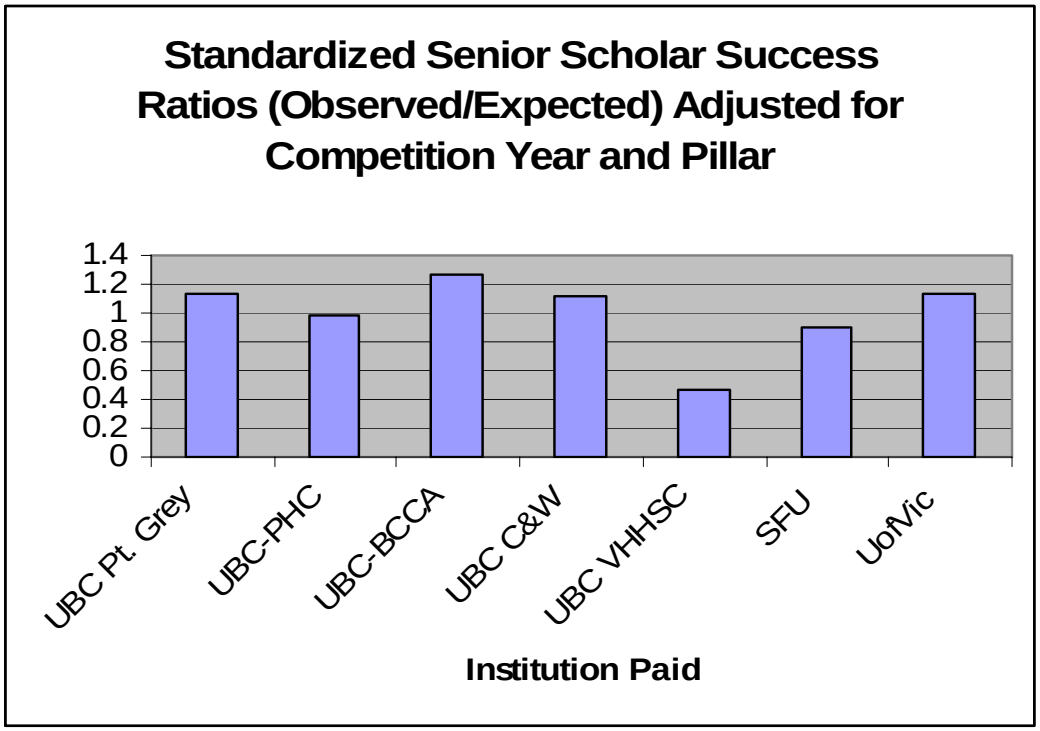
Success Rates by Institution Paid

The University of British Columbia has clearly been the greatest recipient of MSFHR's Career Investigator program. Simon Fraser University and the University of Victoria have also been successful. The University of Northern British Columbia has entered the competitions five times but has not been successful in funding. UNBC entered the competitions in May 2001 (n=1), November 2001 (n=1), November 2004 (n=1), November 2005 (n=2), and November 2003 (n=3).

The graphs below provide standardized success ratios for the Scholar and Senior Scholar category. The first graph demonstrates that SFU, the University of Victoria and UBC Point Grey have success ratios above 1.0 in the Scholar category. For the Senior Scholar category, the University of Victoria, BC Cancer Agency, Children's and Women's Health Centre of British Columbia, and UBC Point Grey have success ratios above 1.0.

Other universities participated in the Career Investigator competitions but not consistently and they were largely unsuccessful. British Columbia Institute of Technology (BCIT) participated in the first competition and was unsuccessful and has not participated again. Thompson Rivers University participated in the 2005 competition with one scholar successfully being funded. The University College of the Fraser Valley participated in one competition unsuccessfully.




Standardized Senior Scholar Success Ratios (Observed/Expected) Adjusted for Competition Year and Pillar
1.4
1.2
1
0.8
0.6
0.4
0.2
0
UBC Pt. Grey
UBC-PHC
UBC-BCCA
UBC C&W
UBC VHHSC
SFU
UofVic
Institution Paid

6. How successful are awardees in attracting other research funds?

The ability of awardees to bring health research funding from national agencies to the province of British Columbia is a measure of the success of the program.

To provide an indicator of how successful MSFHR award recipients are at winning national funding, an analysis of MSFHR career award recipients who also hold Tri-Council (CIHR, NSERC, SSHRC) funding was undertaken.[1]

Of the 221 researchers[2] in the May 2001 through November 2006 competitions, 80% of researchers received Tri-Council funding either concurrently to their MSFHR award (i.e., commencing before and continuing into the duration of), or on/after commencement of their MSFHR award. (It should be noted, however, that scholars who did not win Tri-Council awards may have won awards from other agencies.)

What the analysis also revealed is that more Tri-Council funding was received by the MSFHR researchers *on or after* commencement of their MSFHR award compared to Tri-Council awards they held *before* taking up their MSFHR award.[3] The two tables and the graph below demonstrate this point.

In both instances (Tri-Council awards already held, and those commencing on or after MSFHR award), the Scholar category received the greatest amount of funding. This is due to the greater number of scholars; if we look at average funding per category, then we see that the Distinguished Scholars brought in more Tri-Council funding per researcher, even with the Distinguished Scholar category discontinued after the November 2003 competition.[4]

Table 20: Value of Tri-Council Awards Held Before Commencement of MSFHR Award[5]

Category	Total Tri-Council Funding, Fiscal Years 1999/00 to 2006/07	Number of Researchers	Average Tri-Council Funding per Researcher
Scholar	$16,756,051	76	$220,474
Senior Scholar	$15,803,542	42	$376,275
Distinguished Scholar	$4,567,044	10	$456,704

1 It should be noted that there are some limitations to this analysis: please refer to the Appendix for the complete methodology.

2 Of the 221, 21 researchers were funded in more than one competition. One declined award is excluded from this analysis.

3 It should be noted, however, that Tri-Council awards which had ended before the MSFHR awards commenced were excluded from this analysis.

4 Distinguished Scholar category was discontinued as of the November 2004 competition.

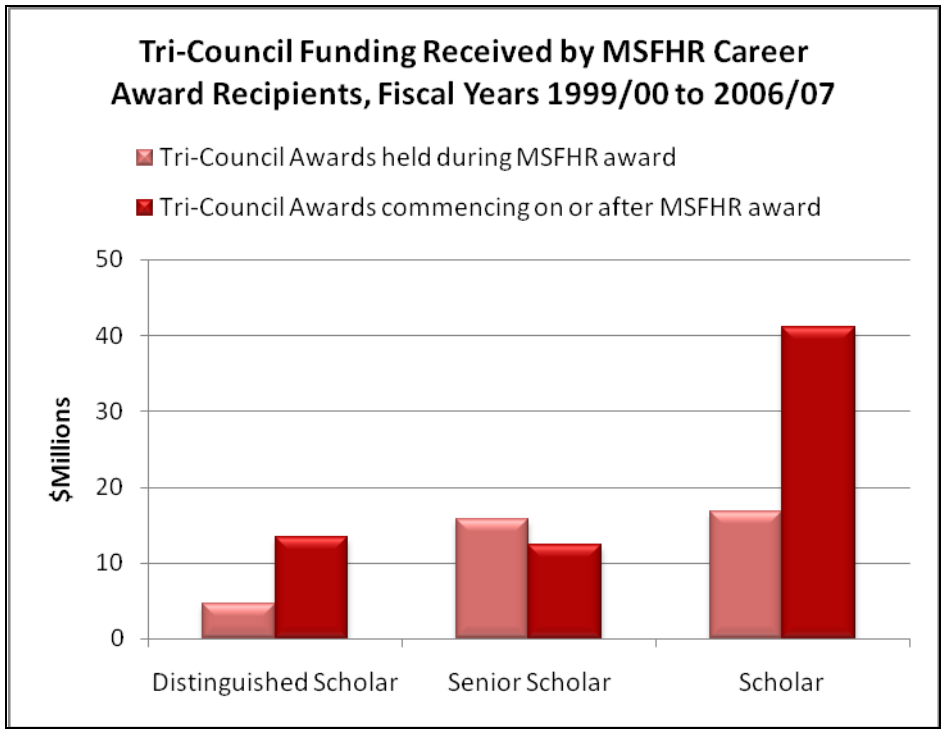
5 Tri-Council award payments commenced before first fiscal year payment of the scholar's MSFHR award, and continued after commencement of MSFHR award.

Grand Total	**$37,126,636**	**128**	**$290,052**

Table 21: Tri Council Funding Commencing On or After First Fiscal Year Payment of MSFHR Award

Category	Total Tri-Council Funding, Fiscal Years 1999/00 to 2006/07	Number of Researchers	Average Tri-Council Funding per Researcher
Scholar	$41,096,060	106	$387,699
Senior Scholar	$12,367,309	26	$475,666
Distinguished Scholar	$13,379,441	12	$1,114,953
Grand Total	**$66,842,811**	**144**	**$464,186**

The graph below illustrates the difference in Tri-Council awards held before the MSFHR award commenced, and those awards commencing on or after.



Comparison with AHFMR

To place this analysis in some context, a benchmark for the funding amounts was needed. The Alberta Heritage Foundation for Medical Research was chosen as a comparator due to its relative similarity to the Michael Smith Foundation for Health Research: both are provincial health research funding agencies in provinces of similar geographic and population size.

To make the comparison more consistent, the MSFHR November 2001 – November 2003 cohorts were chosen (MSFHR guidelines having changed considerably since the May 2001 competition), and only the Scholar and Senior Scholar categories were included (as MSFHR discontinued the Distinguished Scholar category). Scholars from AHFMR competitions corresponding to the MSFHR competition dates were used. As the number of Scholars and Senior Scholars in each agency differs, the more useful figure to look at is the *average Tri-Council funding per researcher.*

The tables below show the amount of Tri-Council funding held by the researchers from each agency during the time period of the analysis.

Table 22: Comparison of MSFHR and AHFMR Researchers' Tri-Council Funding, Commencing on or after First Fiscal Year Payment of Provincial Funding Agency Award. *(Fiscal Year Payments 1999/00 to 2006/07)*

MSFHR

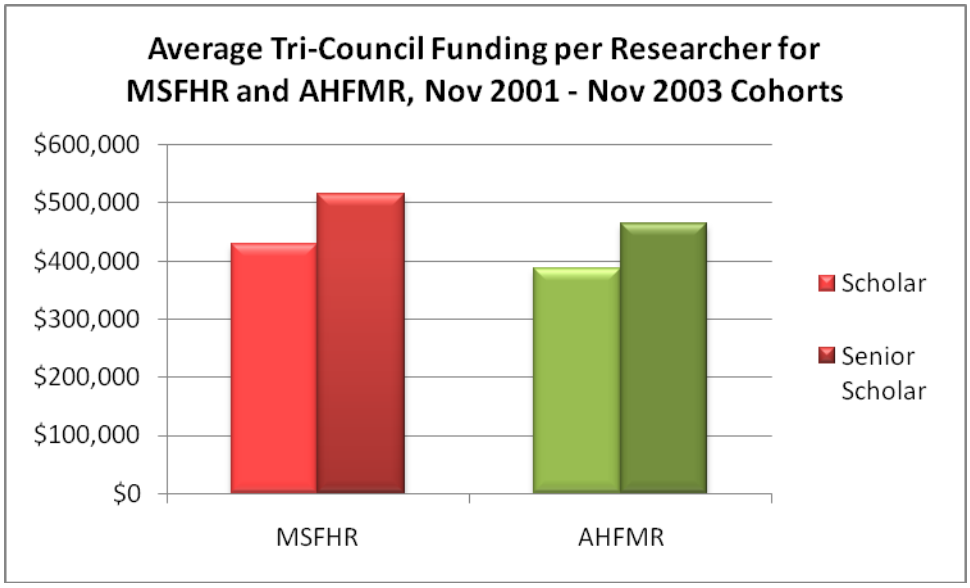
Category	Total Awarded to MSFHR Researchers	Number of Researchers	Average Tri-Council Funding per Researcher
Scholar	$25,744,211	60	$429,070
Senior Scholar	$5,666,251	11	$515,114
Grand Total	**$31,410,462**	**71**	**$442,401**

AHFMR

Category	Total Awarded to AHFMR Researchers	Number of Researchers	Average Tri-Council Funding per Researcher
Scholar	$14,359,107	37	$388,084
Senior Scholar	$11,597,259	25	$463,890
Grand Total	**$25,956,366**	**62**	**$418,651**

The average amount per researcher is very similar for each of the two agencies: $442K attributed to MSFHR researchers, compared to $418K for AHFMR researchers.

The graph below demonstrates this closeness in funding amounts.



Funding amounts above comprise payments made in the Fiscal Years 1999/00 to 2006/07.

7. To what extent is the Career Investigator program successful in engaging health professionals?

Practicing health professionals who perform some clinical work account for 14.7 percent of applicants. Clinical work ranges from hospital rounds 4 to 8 hours per month to clinical duties including attending an inpatient clinical teaching unit three months per year and a one-half day ambulatory teaching clinic. The program does not engage those clinicians who spend a significant amount of time performing clinical work.

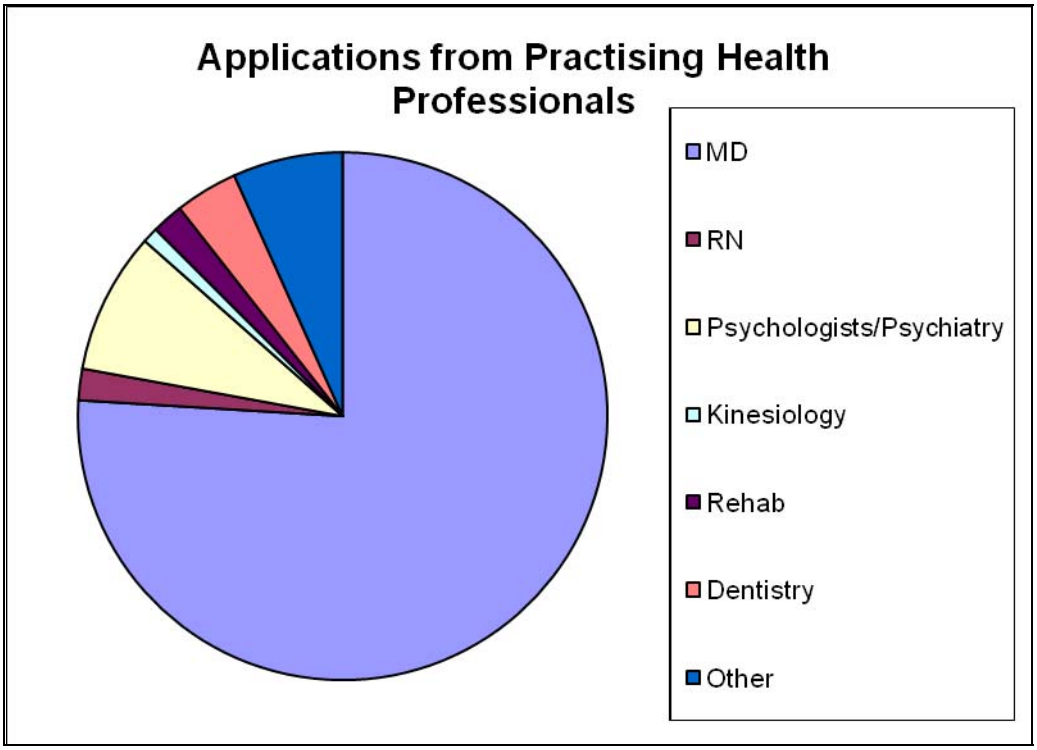


Table 23: Applications from Practicing Health Professionals 2001-2006

MD	79
RN	2
Psychologists/Psychiatry	9
Kinesiology	1
Rehab	2
Dentistry	4
Other	7
Total	**104**

From 2001 through 2006, MSFHR received applications for the Career Investigator Program from 104 practicing health professionals. Practicing includes any amount of clinical work ranging from seeing patients, doing hospital rounds to teaching in the hospital setting.

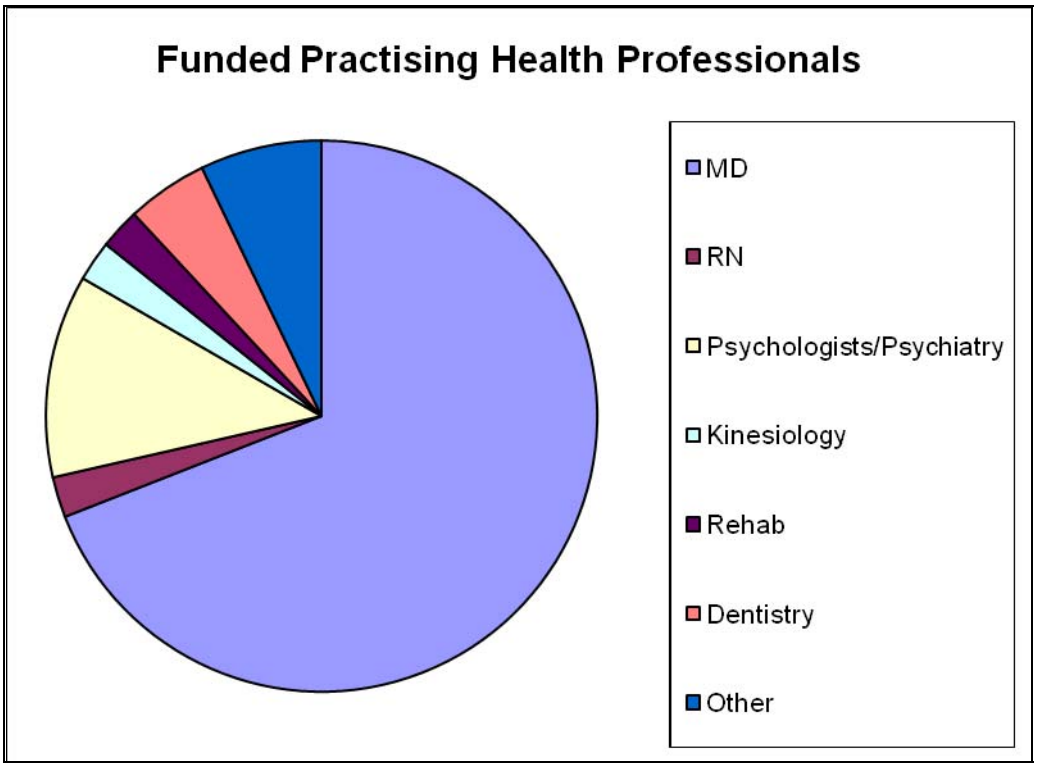


Table 24: Funded Practicing Health Professionals 2001-2006

MD	29
RN	1
Psychologists/Psychiatry	5
Kinesiology	1
Rehab	1
Dentistry	2
Other	3
Total	**42**

From 2001 through 2006, MSFHR funded 42 practicing health professionals or about 17 percent of funded Career Investigators. In this instance, practicing refers to any clinical work. The program does not engage those health professionals who spend a significant amount of time performing clinical work.

The information used for this section comes from department heads' letters that outlined the hours of clinical or other work that would be expected of potential MSFHR awardees as part of their applications for funding. More detailed information regarding health professionals was not collected as part of the application until the 2006 funding year.

8. To what extent is the Career Investigator program successful in supporting the recruitment of excellent researchers to British Columbia?

Overall, the Career Investigator program has supported the recruitment of 63 non-BC residents to British Columbia. This accounts for 26 percent of funded Career Investigator awards. New recruits come from as close as Alberta and Washington State and as far away as Germany.

Table 25: New Recruits to British Columbia

	May-01	Nov-01	Nov-02	Nov-03	Nov-04	Nov-05	Nov-06	Total
Scholar Recruits	3	6	8	9	9	7	6	48
Senior Scholar Recruits	0	2	0	4	2	1	4	13
Distinguished Scholar Recruits	0	1	1	0	n/a	n/a	n/a	2
Total	3	9	9	13	11	8	10	63

Table 26: Locations of New Recruits Prior to Coming to British Columbia

Canada	United States	Europe	Rest of the World
Calgary, AB	Berkeley, CA	London, UK	Victoria, Australia
Edmonton, AB	Palo Alto, CA	Odense, Denmark	
Hamilton, ON	San Francisco, CA	München, Germany	
Toronto, ON	San Diego, CA		
Waterloo, ON	Los Angeles, CA		
Ottawa, ON	Pasadena, CA		
Montreal, QC	Farmington, CT		
Sherbrooke, QC	Tampa, FL		
	Atlanta, GA		
	Boston, MA		
	Bethesda, MD		
	Chevy Chase, MD		
	Minneapolis, MN		
	St. Louis, MO		
	Lincoln, NE		
	Cold Spring Harbor, NY		
	Pittsburgh, PA		
	Providence, RI		
	Charleston, SC		
	Austin, TX		
	Seattle, WA		
	Madison, WI		

9. To what extent is the Career Investigator program successful in supporting the retention of excellent researchers in British Columbia?

Since the inception of the Career Investigator program, 95.4% of awardees have remained in British Columbia. Nine of 194 (2001 through to 2005) awardees have left the province for other research locations.

Table 27: Funded Career Investigators that Left British Columbia

Competition Date	Category	Research Theme	New Location
May 2001	Scholar	Population Health	UBC to Dalhousie
	Scholar	Health Services Research	UBC to Washington University, Seattle
Nov 2001	Scholar	Biomedical	UBC to NIH
Nov 2002	Scholar	Clinical	UBC to University of Montreal
Nov 2003	Senior Scholar	Biomedical	UBC to unknown
	Scholar	Clinical	UBC to McMaster University
Nov 2004	Scholar	Health Services Research	UBC to University of Sherbrooke
	Scholar	Population Health	UBC to McMaster University
Nov 2005	Scholar	Population Health	Thompson River University to University of Ottawa

10. To what extent have funded Scholars been successful in their applications as Senior Scholars?

Consideration of successful applicants who apply to the next level of award funding offers a measure of success of the program. Scholar applicants who apply to the next level have to submit again to the rigour of the peer review process. Overall, 14 Scholars applied to the Senior Scholar Competition in November 2005. Of those 14 Scholars, 10 were successful (about 71 percent). In the November 2006 Senior Scholar competition, 17 Scholars applied with 11 being successful (about 65 percent).

In terms of research themes, the biomedical Scholars that applied to the 2005 Senior Scholar competition were the most successful with 80 percent success. Population health did not have any applicants to the 2005 competition.

Table 28: Success of Funded Scholars to the 2005 Senior Scholar Competition

	Number of Applications	Number Funded	Success Rate
Biomedical	10	8	80%
Clinical	2	1	50%
Health Services	2	1	50%
Population Health	0	0	0

In the 2006 competition, all Scholar applicants to the clinical research theme were successful in securing funding at the Senior Scholar level. Applicants to the population health research theme were successful 75 percent of the time. Biomedical and health services research themes both had success rates of 50 percent.

Table 29: Success of Funded Scholars to the 2006 Senior Scholar Competition

	Number of Applications	Number Funded	Success Rate
Biomedical	6	3	50%
Clinical	3	3	100%
Health Services	4	2	50%
Population Health	4	3	75%

11. To what extent have funded Career Investigators taken up the Establishment Grant?

The Establishment Grant is a set of funds for the researcher to use to start-up their lab and/or career. The intent of the establishment grant is to provide the investigators with reasonable start-up funds for the development of their proposed research programs/projects and/or laboratories. The MSFHR contributions are intended to be supplemental to, not in place of, the host organization's commitment to the provision of appropriate start-up funds and infrastructure for the researchers. The base establishment grant is up to $75,000 over two years. Funded Scholars may be eligible for matching funds up to an additional $50,000 over two years and Senior Scholars may be eligible for matching funds up to an additional $75,000 over two years. The Distinguished Scholar category was eligible for matching up to $100,000 over two years.

Since the November 2001 competition, most Career Investigators who were eligible for the establishment grant received it.

Table 30: Percent Eligible who Take Up Establishment Grant

	May-01	Nov-01	Nov-02	Nov-03	Nov-04	Nov-05	Nov-06
Scholar	72%	85%	100%	96%	95%	100%	93.7%
Senior Scholar	57%	75%	100%	100%	100%	100%	83%
Distinguished Scholar	12.5%	100%	100%	100%	n/a	n/a	n/a

Similarly, most of those Career Investigators who received the base establishment grant took up the matching grant. Host institutions were required to match 2:1. Those investigators who received Scholar and Senior Scholar awards in the November 2006 competition have 12 months from their award start date (for most until June 30, 2008) to obtain matching funds and take up the matching grant. Reasons for not taking up the establishment grant include that institutions are unable to provide matching funds, that those investigators who already have large operating grants do not feel the need to apply for the establishment grant, and ignorance of the guidelines.

Table 31: Percent with Base Establishment Grant who Take Up Matching Grant

	May-01	Nov-01	Nov-02	Nov-03	Nov-04	Nov-05	Nov-06
Scholar	92%	88%	100%	95.8%	90.5%	85%	46%
Senior Scholar	100%	100%	100%	100%	50%	100%	60%
Distinguished Scholar	100%	100%	100%	100%	n/a	n/a	n/a

Conclusion

This report has offered an overview of the Career Investigator Program. An area for further research includes the number of dollars of funding from agencies other than the Tri-Council. Moreover, other measures of the success of funded Career Investigators would be helpful. There are questions about whether MSFHR funds help to recruit investigators to British Columbia and the extent to which these funds support their retention as BC researchers. Moreover, there are questions about how successful funded Career Investigators are at knowledge translation. There is a need for more data to help answer these questions.

Appendix 1

Michael Smith Foundation for Health Research

Methodology for MSFHR and AHFMR / Tri-Council Leverage Analysis

March 28, 2008

Purpose of Analysis:

1. To calculate the amount of Tri-Council funding received by MSFHR Career Award Recipients, both before taking up their MSFHR award, and after.
2. To provide some kind of benchmark for this result by comparing Tri-Council funding received by three cohorts of MSFHR Scholars and Senior Scholars after taking up their MSFHR awards to that of AHFMR Scholars and Senior Scholars.

A. MSFHR Researchers

Data sets used:

- MSFHR Career data
- CIHR awards data (current to June 2007; includes completed Fiscal Year 2006/07 as well as projections for current awards)
- NSERC awards data (current to June 2007; includes completed Fiscal Year 2006/07)
- SSHRC awards data (current to June 2007; includes completed Fiscal Year 2006/07)

Methodology

Because no common Researcher ID exists among the above data sets, the basis of the funding search was the researchers' names. There are some inherent problems with this: any alternate spellings/usages of names (e.g. abbreviations, inclusion of initials, etc.), or surname changes can result in records being missed by database queries.

To minimize any 'loss' of records, names were searched for using Surname+First Initial rather than full name, as differences are generally with the First Name and/or initial. This method will include some 'false' records in the query results, so records then had to be individually, manually examined to verify matches.

1. A list of all funded MSFHR Career award recipients was provided to the Information Services department
2. For each Tri-Council data set, queries were run using Surname+First Initial of each MSFHR researcher compared to Surname+First Initial in the Tri-Council data.
3. Results were provided to the Analysis &Evaluation department
4. Records were manually examined for relevance (based on name, and, in cases where there are different researchers with the same name, on Area of Research); non-relevant records were deleted.

5. SSHRC and NSERC data do not contain Award Start Date or Award End Date information. Because of this, Award Start Dates could not be used across databases to differentiate awards commencing before MSFHR Award Start Date and After, so another methodology was needed. As the data shows Fiscal Year payments only, the first day of the first fiscal year of the earliest payment for each award was taken as the commencement date (for all data sources).
6. Using these dates, Tri-Council records were categorized as 'Ended Before' (all payments for a given award ended before MSFHR award commenced), 'Concurrent' (payments commenced before MSFHR award and continued into the duration of) or 'On or after' (payments commenced in the same Fiscal Year as the MSFHR award, or later). 'Ended Before' awards were excluded from the analysis.
7. In SSHRC and NSERC data, multiple records (each with different Fiscal Years payments) exist for each project, and there is no project identifier. In addition, Project Titles were sometimes missing, or seemed to change over the duration of an award; because of this, it was determined that no accurate count of awards could be completed. All analyses, therefore, would be based on payment amounts.
8. Each Tri-Council data set contained a different time span of Fiscal Year payments, so for consistency, only years common to each were used for calculations: i.e., FY1999/00 to FY2006/07.
9. All cleaned and categorized Tri-Council data was combined, and a manual count of researchers was performed.
10. Analyses were conducted on total payments by MSFHR Category (Scholar, Senior Scholar, Distinguished Scholar) for 'Awards Concurrent to MSFHR Award' and 'Awards Commencing On or After MSFHR Award'.
11. Average Tri-Council funding per researcher was also calculated for each MSFHR Category.

B. AHFMR Researchers

The same methodology as above was used for the list of Scholars and Senior Scholars provided by AHFMR.

C. Comparison of MSFHR and AHFMR

To provide a benchmark for the MSFHR analysis results, a sample of researchers was taken from each of the provincial agencies, and compared. For consistency of comparison, the first (May 2001) cohort of MSFHR Career award recipients was not used because the guidelines for this competition were quite different from the subsequent ones.

The November 2001 through November 2003 MSFHR researchers were taken as the sample group, along with the AHFMR researchers corresponding to these cohort dates. Only the Scholar and Senior Scholar categories were included as MSFHR discontinued the Distinguished Scholar category.

Because the number of Scholars and Senior Scholars from each agency within this timeframe differed, the average per researcher of the Tri-Council funding was calculated and used as the benchmark.