
Access to Medical Education in Canada

Do Differing Tuition Regimes Affect Access
and Career Choice?

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Prepared for the Canada Millennium Scholarship Foundation

Snowdon & Associates Inc.

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Preface and Acknowledgements

Late in 2003 the Canada Millennium Scholarship Foundation (“the Foundation”) sponsored a project aimed at shedding some light on the impact of tuition increases in professional programs on access, debt levels and career choice. For a variety of reasons, the project took considerably longer than anticipated, and the usefulness of the results was affected by low response rates in two of the three surveys associated with the project. Moreover, the interest that sparked the original project in 2003 was muted by the imposition of tuition freezes in many parts of the country and the introduction of a number of major changes and improvements to student assistance at the federal and provincial levels.

By the time a draft report from the original project was sent to the Foundation (fall 2006), at least one provincial government (Ontario) had replaced its tuition freeze with a regulatory framework that allowed for differential tuition increases in select professional programs—albeit with a “capped” annual percentage increase. Once again, the prospect of increased tuition raised questions and concerns about access. At the same time, media coverage has highlighted the pressing matter of “doctor shortages,” and especially shortages of family physicians, with arguments being made about increasing debt loads influencing career choice. For

those reasons, the time was right to “revisit” the original study.

This report is the product of contributions from the many individuals who were involved with the original project and those who took an interest and played a role in the more recent effort. Members of the Research Working Group established at the outset of the original project in 2003 were instrumental in the development of the original survey instruments and the myriad steps needed to have students and graduates participate in the survey. A number of these individuals devoted considerable time to the original project, and their contributions are acknowledged and appreciated.

Andrew Parkin and Joseph Berger at the Foundation have been supportive of revisiting the earlier effort and exploring the available data from a different perspective. Their support and contributions to this project are also appreciated. This project benefited immensely from the active involvement of Angelo Elias, who performed the statistical analysis and who embraced the project with an enthusiasm that translated into a major contribution to the interpretation of the survey results. Finally, a thank you to the anonymous reviewer whose comments and critique helped improve the final product.

December 2007

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Executive Summary

This report addresses the factors influencing access to medical education, using information from a survey of medical students enrolled in 2004–05. The study examines the survey responses according to whether students were enrolled in a low-, medium- or high-tuition medical program.

There are clearly some demographic differences between survey respondents enrolled in low-tuition universities (two Quebec universities) in comparison to those in medium- and high-tuition universities. Specifically, students in low-tuition universities are, on average, younger, have less pre-medical debt and end up with less debt than students in medium- and high-tuition schools. The ability to enter medical school directly from CEGEP contributes to the lower average age of students in low-tuition schools, and Quebec's tuition policy and its relatively generous student assistance program have a major impact on student debt. The proportion of females is also higher in low-tuition universities.

The grouped responses were examined for differences in debt levels, choice of specialty and socio-economic profile:

- While actual and anticipated debt levels are clearly different between students in low-tuition medical schools and those in medium- and high-tuition schools, the differences appear to have little bearing on specialty choice.
- With respect to differences in the socio-economic profile as determined by father's education level, there is no observed difference by tuition group.
- With respect to differences in the socio-economic profile as determined by self-reported parental income, there is a borderline difference that indicates higher proportions of both lower income and higher income students in the medium- and high-tuition categories compared to the low-tuition category.

The survey findings are considered against a review of key factors that are seen as having a major impact on medical school accessibility and affordability, including provincial policies governing the number of available places in medical schools, student assistance practices, physician remuneration and institutional admission practices. The main points that emerge from the review are:

- governments play a critical role in establishing access opportunities (capacity);
- tuition is but one component in a more complex affordability equation involving student assistance, tax expenditures, medical student remuneration and trends in physician remuneration;
- the government plays a role in establishing a financial environment that is affordable and reflective of the significant investment required by students contemplating the pursuit of a medical career;
- governments have the financing tools but appear to lack a coherent framework to optimize the utility of public investment; and
- medical school admission policies and practices deserve a closer look to determine the extent to which those policies and practices may inadvertently impact the socio-economic diversity of the applicant pool.

An extensive literature review regarding the impact of tuition on access and career choice corroborates the results of the survey findings and reinforces the importance of looking beyond tuition to develop a more comprehensive picture of the many factors influencing 1) accessibility and affordability and 2) the impact of debt on choice of specialty.

There are additional research questions that emerged from the analysis of the medical student survey data. Specifically, differences in anticipated debt levels among the low-, medium- and high-tuition groups far exceeded the differences in tuition, suggesting that other factors are also influencing the estimates of anticipated debt levels. Moreover, the extent to which non-repayable student assistance (e.g., scholarships, bursaries provided by various sources) is factored into estimates of anticipated debt also deserves further investigation.

The results of this study also lead to a number of interesting observations about provincial policies that deserve further examination. Despite having the lowest tuition in Canada and relatively generous student assistance programs, the socio-economic profile of students in the Quebec medical schools participating in the survey (i.e., Université Laval,

McGill University) is very similar to the socio-economic profile of students in the medium- and high-tuition medical programs. Why is this so? Differences in debt load seem to have little impact on specialty choice, suggesting that other factors are more important in addressing physician shortages. What are those factors and how are they best addressed?

Finally, it is important to note the existence of the *National Physician Survey* as a relatively new tool to help diagnose a multitude of access and affordability issues in medical education; better diagnosis will lead to the development of better treatments. Accordingly, the results from the 2004 *NPS* and 2007 *NPS* should become a valuable resource for researchers interested in understanding the complexities associated with access and affordability issues and factors influencing specialty choice.

I. Purpose and Background

This report has two primary purposes: 1) to provide a synopsis of a previous research project that was sponsored by the Foundation regarding the *impact of tuition increases* on access to medical programs, and 2) to revisit some of the survey data compiled during that project with a view to determining the impact of *major differences in tuition levels* across the country. A secondary purpose is to illustrate the role of other factors, such as provincial health resource policies and institutional admission policies, that influence medical education access and affordability.

The report is organized as follows:

- A brief background section sets the context and leads into the review of the previous project.
- The review is followed by a description of this revised project and the findings.
- The “Other Considerations” section provides an overview of other factors that influence access and affordability, including the availability of spaces, provincial differences in remuneration levels and practices for medical students and medical residents, changes in physician remuneration, and institutional admission policies.
- The “Discussion” section reviews the main observations and findings in the context of other research that has documented the impact of increased educational costs on the socio-economic “mix” of students, debt loads and specialty choice.
- A concluding section provides a brief summary of the report and identifies areas for further research.

Background

The relatively rapid increase in tuition that was a hallmark of the mid-to-late 1990s and the first few years of this century sparked considerable interest in the impact of such increases on accessibility. While concerns were expressed about tuition increases in general, particular attention was focused on professional programs, where, in some provinces, the regulatory regime allowed for substantial increases in tuition. In the case of medical tuition, critics of the increases argued that access to medical education by under-represented groups, in particular, would be negatively affected because the increased costs would be seen as a barrier. Concerns were also expressed that medical students would be driven to opt for more lucrative medical specialties to service their increased debt load after graduation—thus exacerbating an emerging family physician shortage.¹

1. Canadian Federation of Medical Students position paper, *Decreased Interest in Family Medicine*, April 30, 2005.

All Canadian universities with medical schools were approached to participate in the project. Two institutions declined from the outset (University of Sherbrooke and University of Toronto), and representatives from 14 institutions formed a Research Working Group to help with research design, methodology and implementation. Ultimately, 11 universities actually participated in the surveys⁴ associated

with the project: one survey for all current students (2004–05) and separate surveys for both the class of 1998 and the class of 2001. Despite the efforts of the participating medical schools, the response rates from the surveys were lower than anticipated and thus less representative of the surveyed populations than was hoped for, as illustrated in Tables 1 and 2.

Table 1: Response Rate by Institution—Survey of Undergraduate Medical Students Enrolled in 2004–05

Students	2004/05	%	# of	%	Response
University	Survey	Distribution	Responses	Distribution	Rate
	Population				
Dalhousie University	359	7%	85	7%	24%
McGill University	617	13%	46	4%	7%
McMaster University	422	9%	54	5%	13%
Memorial University of Newfoundland	242	5%	43	4%	18%
Queen's University	392	8%	110	9%	28%
Université Laval	802	17%	195	17%	24%
University of Calgary	323	7%	163	14%	50%
University of Manitoba	351	7%	88	7%	25%
University of Ottawa	541	11%	172	15%	32%
University of Saskatchewan	237	5%	45	4%	19%
University of Western Ontario	529	11%	176	15%	33%
Total	4,815	100%	1,177	100%	24%

Source: Canada Millennium Scholarship Foundation and IBM Global Business Services, *Survey of Undergraduate Medical Students Enrolled in 2004–05*.

Table 2: Response Rate by Institution—Survey of Graduates of the Class of 1998 and Class of 2001 Combined

Graduates	1998 and 2001	%	# of	%	Response
University	Survey	Distribution	Responses	Distribution	Rate
	Population				
Dalhousie University	159	8%	19	10%	12%
McGill University	380	19%	14	8%	4%
McMaster University	201	10%	2	1%	1%
Memorial University of Newfoundland	116	6%	12	7%	10%
Queen's University	151	7%	8	4%	5%
Université Laval	252	13%	22	12%	9%
University of Calgary	131	7%	30	16%	23%
University of Manitoba	140	7%	26	14%	19%
University of Ottawa	178	9%	15	8%	8%
University of Saskatchewan	110	5%	19	10%	17%
University of Western Ontario	197	10%	16	9%	8%
Total	2,015	100%	183	100%	9%

Source: Canada Millennium Scholarship Foundation and IBM Global Business Services, *Survey of Graduates of the Class of 2001 and Survey of Graduates of the Class of 1998*.

4. Six of the participating universities provided expenditure information about student assistance for medical students.

IBM Global Business Services utilized the survey data to prepare a draft report. However, the low response rates from the graduates and the skewed nature of the student survey data by institution raised concerns about the validity of the research results.

Synopsis of IBM Survey Findings

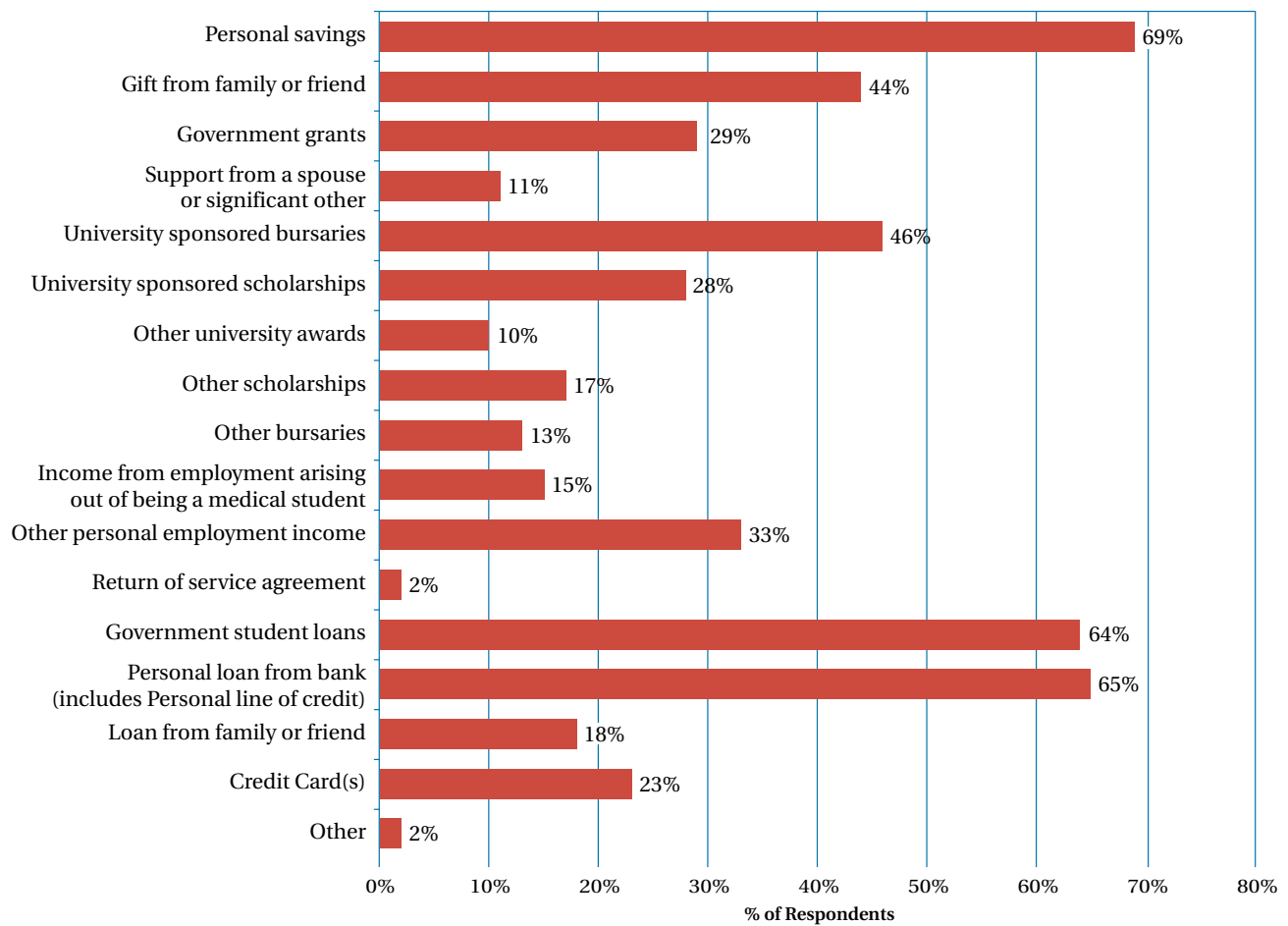
Essentially, the original study set out to address four specific research questions:

- To what extent has higher tuition affected the education financing strategies of students?
- To what extent has it increased total debt or affected the mix of debt?

- To what extent has student debt affected choices of specialties or type of practice?
- To what extent have tuition and debt patterns affected the demographic mix of prospective physicians?

With respect to the first question, the low response rate from graduates made comparisons over time impractical. The *Survey of Undergraduate Medical Students Enrolled in 2004–05* did, however, provide some insight into the financial instruments employed by current students to pay for their medical education. Figure 1 displays the proportion of students using each of the identified financing tools.

Figure 1 — Sources of Funding for Undergraduate Medical Degrees



Source: Canada Millennium Scholarship Foundation and IBM Global Business Services, *Survey of Undergraduate Medical Students Enrolled in 2004–05*.

Figure 1 indicates that about 70 percent of medical students used personal savings to contribute to the financing of their education, while government student loans (64 percent) and bank loans (65 percent) were also often cited as sources of financing used by respondents. University-sponsored bursaries and gifts from family or friends round out the top five financing tools, both being identified by about 45 percent of medical students enrolled in 2004–05.

While Figure 1 illustrates the *variety* of sources of financing, it is important to recognize that in terms of the *amount* of money used, government loans and bank loans were cited as the two main sources of financing:

“These two methods of financing were predominant regardless of the level of debt. Both those who reported having little debt and those who reported having high levels of debt used mostly government student loans and personal bank loans to finance their education. Although a high number of respondents indicated they were using personal savings to finance their education, much fewer (19 percent) identified personal savings as one of their top two sources of funding.”⁵

As shown in Table 3, the survey responses also showed a marked regional difference in actual and anticipated debt loads—one of the factors that influenced the Foundation’s decision to explore the 2004–05 student survey responses in more detail.

With respect to factors influencing students’ choice of practice location following the completion of their residency, the top-ranked factors focused on work/life balance and lifestyle concerns. Cost of living and earnings potential were of less importance (Table 4).

Students were also asked to identify a preferred medical specialty for their future career. The overall findings suggested that the level of anticipated debt had no impact on their medical specialty choice.

The low response rate from graduates (i.e., class of 1998 and 2001) meant that it was impossible to accurately determine whether or not there had been a change over time in the socio-economic or ethno-cultural make-up of the medical student population.

The draft report prepared by IBM Global Business Services is available from the Canada Millennium Scholarship Foundation.

Table 3: Average Debt Levels by Province or Region

Province or Region	Debt prior to entering program	Debt as of August 1 of current academic year	Outstanding debt at time of survey	Outstanding debt anticipated at time of graduation
Atlantic Region	\$16,200*	\$47,200	\$57,800	\$109,500
Quebec	\$5,900*	\$21,400*	\$16,400	\$36,600
Ontario	\$14,100	\$46,400	\$60,400	\$105,900
Prairie Provinces	\$30,700*	\$60,700*	\$76,900	\$106,400
Average	\$16,800	\$45,000	\$55,200	\$92,200

Data reliability for numbers in this type of table is expressed in terms of coefficient of variation (CV). The higher the coefficient, the less reliable the data. An asterisk (*) is used after the figure to denote a CV of 16 to 33 percent.

Source: Canada Millennium Scholarship Foundation and IBM Global Business Services, *Survey of Undergraduate Medical Students Enrolled in 2004–05*.

Table 4: Importance of Factors on Choice of Location Following Residency

Factors	Mean	Male	Female
Concern over workloads / work-life balance	4.3	4.1	4.3
Preference for lifestyle in a given community	4.2	4.2	4.3
Employment of spouse / significant other	4.0	3.8	4.2
Depth of availability of medical resources in the community	3.6	3.6	3.6
Desire to contribute to a given community	3.6	3.4	3.7
Desire to practice in a location with depth of resources in related medical specialties	3.5	3.6	3.5
Earnings potential / net income	3.4	3.5	3.3
Home community	3.2	3.1	3.3
Cost of living	3.2	3.1	3.2
Join an existing practice	2.8	2.6	3.0
Return of service program	2.5	2.4	2.6

Scale: 5=Very important, 4=Somewhat important, 3=Neutral, 2=Somewhat unimportant, 1=Not at all important.

Source: Canada Millennium Scholarship Foundation and IBM Global Business Services, *Survey of Undergraduate Medical Students Enrolled in 2004–05*.

3. Revisiting the Survey Data

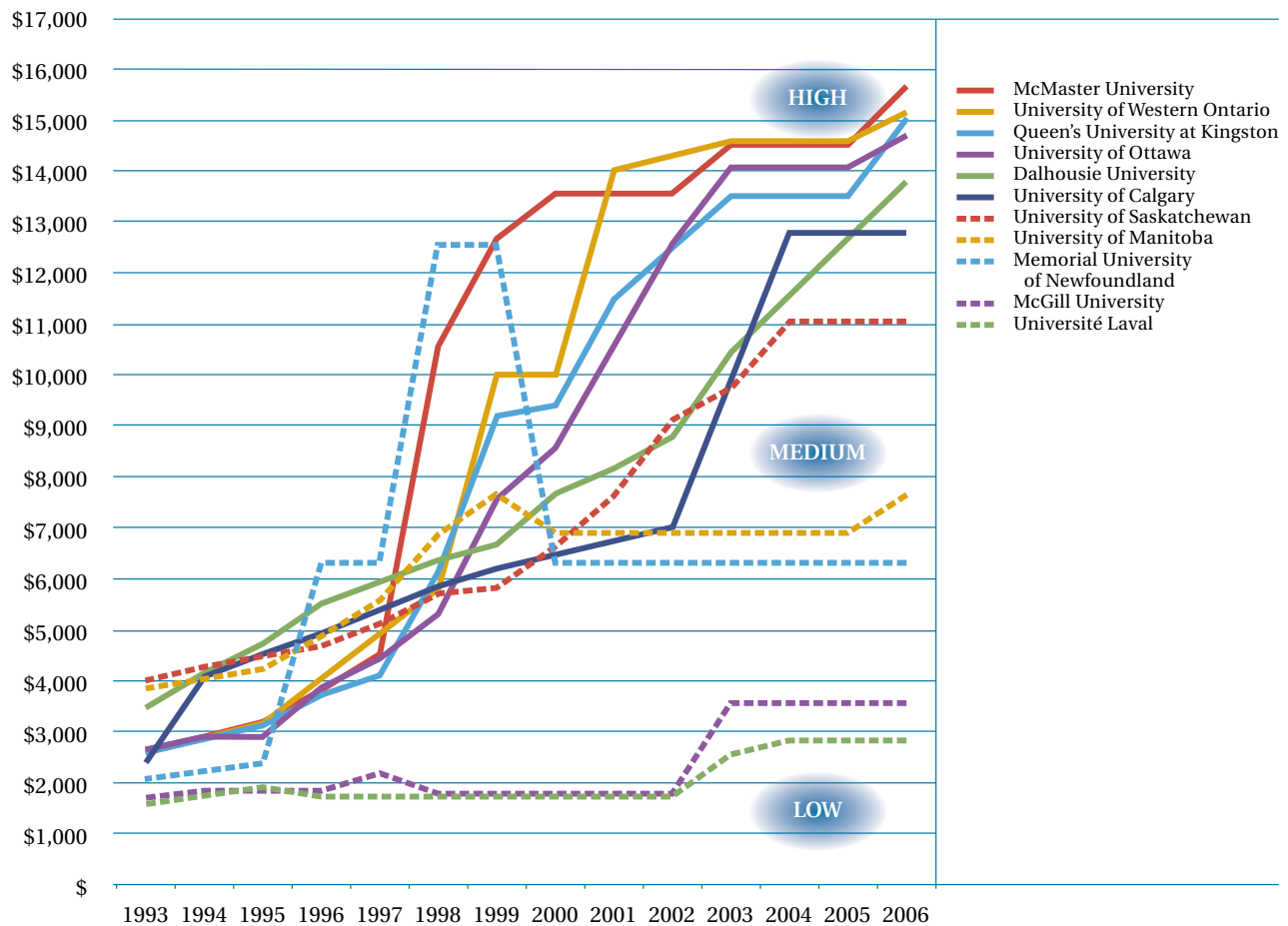
In an attempt to derive as much useful information from the earlier effort as possible, and in light of the very limited amount of research available in Canada regarding access to professional programs, the Foundation decided to review the survey data for undergraduate medical students enrolled in 2004–05—where the response rate was 24 percent (n=1,177)—to see if there were useful insights that could be gleaned from them. The general research question focused on whether there were differences in the 2004–05 student responses according to the level of tuition—which varied by province and by institution within each province. Given the low response rates from the surveys of graduates (i.e., classes of 1998 and 2001), no attempt was made to revisit those data.

New Categorization

To explore whether the level of tuition had an impact on the socio-economic composition of students enrolled in medicine programs, anticipated debt, choice of specialty and career choice, the survey responses were grouped according to whether the student was attending a low-, medium- or high-tuition school, as determined by a review of tuition in medicine programs in the universities participating in the original study.

As illustrated in Figure 2, tuition for first-year medical students has changed markedly over the past decade or so from a range of about \$1,500 to \$4,000 in the early part of the 1990s to a range of about \$3,000 to almost \$16,000 in 2006. From Figure 2 it is also evident that the changes over time have been marked by rather dramatic adjustments in policy and tuition levels. Memorial University of Newfoundland, for example, experienced major increases for a few years, and then a dramatic decrease, followed by no change. The University of Manitoba began increasing fees more or less in line with many other institutions, but then reversed course in 2000, decreasing tuition, and then held tuition at the reduced level until very recently. Quebec universities (i.e., Université Laval, McGill University) experienced a freeze for much of the period, and although there were some increases in more recent years, tuition for medical students at these institutions remains by far the lowest in the country.

Tuition levels for *all* medical schools are presented in Appendix B. Tuition is regulated by the provinces. Dramatic shifts in policy can thus be traced to major changes in provincial policy—a matter we will return to later in the report.

Figure 2 — First-Year Medicine Tuition at Survey Institutions (1993–2006)

Note: Manitoba's tuition reflects the ten percent "rebate" introduced in 2000.

Source: Statistics Canada, *University Tuition Fees for Full-Time Canadian Students*, various years, and the Association of Faculties of Medicine of Canada.

The review of tuition information resulted in the following categorization for this study:

- Low tuition: Université Laval, McGill University
- Medium tuition: University of Manitoba, Memorial University of Newfoundland
- High tuition: University of Calgary, University of Saskatchewan, University of Western Ontario, McMaster University, University of Ottawa, Queen's University, Dalhousie University

The low-tuition universities are exclusively in Quebec, and there are considerable policy differences among the provinces with respect to tuition, student assistance, support for medical students and physician remuneration. These points will be explored later in the report.

Student Profile by Tuition Category

Table 5 provides a summary of the student profile for each tuition category, as well as for survey respondents as a whole.

Table 5: Student Profile by Tuition Category

		Low Tuition	% of Total	Medium Tuition	% of Total	High Tuition	% of Total	Total	% of Total
Number		241	20.5%	131	11.1%	805	68.4%	1177	100%
Age Group	20–25	133	55.2%	15	11.5%	118	14.7%	266	22.6%
	26–30	93	38.6%	90	68.7%	549	68.3%	732	62.2%
	31–35	15	6.2%	21	16.0%	110	13.7%	146	12.4%
	36+	0	0.0%	5	3.8%	27	3.4%	32	2.7%
	Total	241	100.0%	131	100.0%	804	100.0%	1176	100.0%
Average Age		25.9		28.3		28.1		27.7	
Gender	Female	171	71.0%	75	57.3%	502	62.4%	748	63.6%
	Male	70	29.0%	56	42.7%	303	37.6%	429	36.4%
	Total	241	100.0%	131	100.0%	805	100.0%	1177	100.0%
Year of Program	1st	59	24.5%	35	26.7%	260	32.3%	354	30.1%
	2nd	65	27.0%	45	34.4%	236	29.3%	346	29.4%
	3rd	52	21.6%	19	14.5%	181	22.5%	252	21.4%
	4th	49	20.3%	32	24.4%	127	15.8%	208	17.7%
	> 4	16	6.6%	0	0.0%	1	0.1%	17	1.4%
	Total	241	100.0%	131	100.0%	805	100.0%	1177	100.0%

Source: Canada Millennium Scholarship Foundation and IBM Global Business Services, *Survey of Undergraduate Medical Students Enrolled in 2004–05*.

A number of points emerge from the data displayed in Table 5:

- Individuals in the low-tuition group are approximately two to 2.5 years younger than those in the other groups.
- There are more females in the low-tuition group than in the other groups.
- The distribution of students by year of program is reasonably similar, although the absolute numbers in certain categories preclude analysis at the program year level.
- Approximately 60 percent of respondents are in the first half of their program. Accordingly, answers to questions about the future—specialty choice, factors influencing choice of career location, anticipated debt levels, etc.—need to be considered in that context.

Using data from the Association of Faculties of Medicine of Canada (AFMC) and the *National Physician Survey* (2004), a comparison was made to determine whether the survey respondents in this study were representative of all medical students in the participating universities. Appendix C of this report provides greater detail, but the basic comparison indicated that:

- Female survey respondents are over-represented relative to total medical student enrolment in 2004–05 (63.6 versus 57.6 percent).
- The high-tuition group is over-represented relative to total medical student enrolment in 2004–05 in high-tuition universities (68.4 versus 57.2 percent).
- The low-tuition group is under-represented relative to total medical student enrolment in 2004–05 in low-tuition institutions (20.5 versus 30.2 percent).
- Approximately three-quarters of respondents in each category indicated a marital status of “single,” which is similar to the findings in the *National Physician Survey* (2004).

Readers should keep in mind that the following analyses focus on the respondents to the *Survey of Undergraduate Medical Students Enrolled in 2004–05* and on comparing responses from the low-tuition group to those from the medium- and high-tuition groups. The survey instrument is included as Appendix D.

Financing Medical Education

As noted earlier, students use a variety of funding sources to finance their education, with personal savings cited more often than any other source. In terms of the *largest* sources, however, government loans and bank loans head the list. The reliance on government loans and bank loans is considerably less among students from low-tuition universities. Among these respondents, there was a greater reliance on gifts from family/friends and non-medical employment income.

In terms of non-repayable assistance in the survey year, Table 7 indicates that government grants appear to play a more prominent role at low-tuition institutions (in terms of both absolute number received and average value). Family contributions also play a more prominent role at low-tuition institutions, while university grants/bursaries are more prominent at high-tuition institutions.

With respect to student debt, the original study indicated that there were regional differences in actual and anticipated debt. The new categorization provides some additional insight into that observation. Over 70 percent of the students in low-tuition institutions reported no debt prior to entering medical school versus approximately 60 percent in medium- and high-tuition universities. The average level of debt—for those with debt—ranged from approximately \$16,000 in the low-tuition group to over \$22,000 in the high-tuition group.

Table 6: Top Sources of Funding for Undergraduate Medical Degree

Q. 13 What were the top two sources of funding for your undergraduate MD Degree?

Funding Sources	Low Tuition	% of Total	Medium Tuition	% of Total	High Tuition	% of Total	Total	% of Total
Government Loan	81	33.6%	64	48.9%	444	55.2%	589	50.0%
Bank Loan	60	24.9%	61	46.6%	438	54.4%	559	47.5%
Personal savings	49	20.3%	24	18.3%	126	15.7%	199	16.9%
Gift from family/friend	83	34.4%	14	10.7%	91	11.3%	188	16.0%
Employment Income	43	17.8%	13	9.9%	40	5.0%	96	8.2%
Reference Total	241		131		805		1177	

Source: Canada Millennium Scholarship Foundation and IBM Global Business Services, *Survey of Undergraduate Medical Students Enrolled in 2004–05*.

Table 7: Non-Repayable Financial Assistance

Q.23 How much do you expect to receive in non-repayable gifts or grants this academic year?

Source of Non-repayable Funding	Low Tuition	Average Amount	Medium Tuition	Average Amount	High Tuition	Average Amount	Total	Average Amount
Government grant	91	\$5,821	34	\$4,758	320	\$4,607	445	\$4,867
University grant/bursary	24	\$1,758	22	\$1,516	427	\$4,005	473	\$3,775
Scholarship/award	47	\$4,546	14	\$4,021	187	\$5,068	248	\$4,910
Family contribution	122	\$6,054	25	\$5,424	207	\$10,420	354	\$8,563
Return of service	2	\$15,000	13	\$29,615	15	\$25,253	30	\$26,460
Other	4	\$2,750	2	\$1,775	15	\$4,360	21	\$3,807
Average	200	\$7,826	78	\$9,943	682	\$8,364	960	\$8,380
Reference Total	241		131		805		1177	
Pct with Non-repayable	83%		60%		85%		82%	

Source: Canada Millennium Scholarship Foundation and IBM Global Business Services, *Survey of Undergraduate Medical Students Enrolled in 2004–05*.**Table 8: Actual Debt Prior to Medical School**

Q.16 Did you have any debt prior to entering medical school?

	Low Tuition	% of Total	Medium Tuition	% of Total	High Tuition	% of Total	Total	% of Total
Yes	70	29.0%	53	40.5%	346	43.0%	469	39.8%
No	171	71.0%	78	59.5%	459	57.0%	708	60.2%
Total	241	100.0%	131	100.0%	805	100.0%	1177	100.0%
Average ALL	\$4,655		\$8,147		\$9,566		\$8,411	
Average with debt	70		53		346		469	
	\$16,026		\$20,137		\$22,256		\$21,087	

Excludes mortgage debt.

Source: Canada Millennium Scholarship Foundation and IBM Global Business Services, *Survey of Undergraduate Medical Students Enrolled in 2004–05*.

In the case of *anticipated* debt by the end of their degree, there is a considerable difference between responses from students at low-tuition universities and those at medium- and high-tuition institutions. In all categories, however, debt levels are expected to increase—more than doubling in the low-tuition category and more than quadrupling in the medium- and high-tuition categories.

The anticipated increase in debt relative to the amounts reported in Table 8 ranges on average from about \$23,500 (\$39,855 minus \$16,164) among students in the low-tuition category to about \$68,000 (\$88,176 minus \$20,136) in the medium-tuition category and approximately \$82,000 (\$104,682 minus \$22,256) in the high-tuition category. Students in the low-tuition category indicated that the anticipated

Table 9: Anticipated Debt at Graduation

Q. 20 What amount of outstanding debt do you anticipate having at the time of graduation with your MD degree?

	Low Tuition	% of Total	Medium Tuition	% of Total	High Tuition	% of Total	Overall	% of Total
Average debt for all respondents	\$34,894		\$82,792		\$96,360		\$82,264	
Number of respondents with debt	211	88%	123	94%	741	92%	1075	91%
Average debt of respondents with debt	\$39,855		\$88,176		\$104,682		\$90,069	

Note: Excludes mortgage debt.

Source: Canada Millennium Scholarship Foundation and IBM Global Business Services, *Survey of Undergraduate Medical Students Enrolled in 2004–05*.

increase in debt would be funded more or less equally from government loans and bank loans. Students in the medium- and high-tuition categories indicated that government loans would fund about one-third of the anticipated increase in debt, with bank loans covering the remainder.

It is clear that there is a considerable difference in *anticipated* debt levels. However, the contribution of increased tuition to the overall anticipated debt load deserves further comment. Given that the tuition difference between the low- and medium-tuition groups is approximately \$4,000 to \$5,000 per annum, and based on a four-year medical program, it is unclear why the anticipated debt load for students in the medium-tuition group is in the order of \$45,000 higher. Similarly, the tuition difference between the low-tuition and high-tuition category is in the order of \$10,000 to \$14,000 per annum, yet the anticipated debt is considerably higher over the length of a four-year program. A higher proportion of students at low-tuition institutions (26.6 percent) live at home, thus perhaps not incurring the same level of living costs as their counterparts in high-tuition institutions. However, the proportion of medium-tuition students living at home (23.7 percent) is very similar to that for low-tuition students. This is an area that deserves further research, since differences in tuition do not fully explain the major differences in anticipated debt levels.

The anticipated debt information also needs to be placed in the context of other supplementary data. Six of the 11 universities provided institutional financial assistance information—specifically, four of the high-tuition institutions (Queen’s University, the University of Western Ontario, McMaster University and Dalhousie University) and both medium-tuition institutions. There is a marked difference between the two groupings in terms of the proportion of students receiving institutional awards/bursaries (approximately 70 percent of the high-tuition group versus 30 percent of the medium-tuition group) and the average award level (approximately \$6,750 in the high-tuition group versus \$1,400 in the medium-tuition group). It is unclear how the existence of those monies is factored into the anticipated debt amounts reported in Table 9. Again, this is another area that deserves further research—that is, to what extent is institutional student assistance taken into account when considering anticipated debt levels?

Student estimates of anticipated debt at graduation also differ by year of study. On average, students in first year provided estimates of anticipated debt that were \$10,000 higher than those of fourth-year students. Since major tuition increases are often applied to incoming classes—and thus the overall effect is “phased in” over time—it is possible that a portion of the previously noted difference is a result of differences in tuition by year. It is also likely that students nearing the completion of their program have a more accurate estimate of their anticipated debt level.

University, Specialty and Career Choice

Students were asked to rate the importance of a list of factors on their choice of medical school. The results, displayed in Table 10, indicate a clear emphasis on location as the single most important factor, followed by academic reputation.

In terms of specialty choice, responses to the question “If you were to identify a preferred specialty, which of the following would best describe that specialty?”, are displayed in Table 11.

Table 10: Factors Influencing Choice of Medical School
Q.8 Importance of Factors Influencing Choice of Medical School

Factor	Low Tuition	Medium Tuition	High Tuition	Overall
Location of medical school	4.0	3.8	3.8	3.8
Academic reputation	3.3	3.4	3.5	3.4
Cost of living	2.9	3.4	3.0	3.0
Tuition costs	2.5	3.6	3.0	3.0
Availability of financial assistance	2.2	2.9	3.0	2.9
Academic standing	2.5	3.1	2.9	2.8
Housing costs	3.0	3.2	2.7	2.8
Potential to live at home	3.1	2.5	2.1	2.3
Employment for spouse/partner	1.8	2.3	2.4	2.3
Friends, relatives attended	2.1	2.4	1.9	2.0
Other mandatory costs	1.7	2.0	1.9	1.9
Parental influence	2.0	2.0	1.7	1.8

Scale: 5=Very important, 4=Somewhat important, 3=Neutral, 2=Somewhat unimportant, 1=Not at all important.

Source: Canada Millennium Scholarship Foundation and IBM Global Business Services, *Survey of Undergraduate Medical Students Enrolled in 2004–05*.

Table 11: Choice of Specialty

Q.10 If you were to identify a preferred specialty, which of the following would best describe that specialty? (top 7 selected)

Specialty Area	Low Tuition	% of Total	Medium Tuition	% of Total	High Tuition	% of Total	Total	% of Total
Family Medicine	46	19.1%	34	26.0%	182	22.6%	262	22.3%
Internal Medicine	29	12.0%	20	15.3%	137	17.0%	186	15.8%
Pediatrics	28	11.6%	17	13.0%	72	8.9%	117	9.9%
Emergency Medicine	30	12.4%	8	6.1%	55	6.8%	93	7.9%
Obstetrics & Gynecology	14	5.8%	7	5.3%	52	6.5%	73	6.2%
Orthopedics	8	3.3%	5	3.8%	36	4.5%	49	4.2%
General Surgery	6	2.5%	6	4.6%	33	4.1%	45	3.8%
Sub-total	161	66.8%	97	74.0%	567	70.4%	825	70.1%
All other	80	33.2%	34	26.0%	238	29.6%	352	29.9%
Grand Total	241	100.0%	131	100.0%	805	100.0%	1177	100.0%

Source: Canada Millennium Scholarship Foundation and IBM Global Business Services, *Survey of Undergraduate Medical Students Enrolled in 2004–05*.

Overall, the survey responses showed no relationship between tuition category and choice of specialty ($p = .780$). Please see Appendix C for details. Readers should keep in mind the earlier caveat regarding the fact that approximately 60 percent of the students are in first or second year and thus their selected preferences may change as they progress through the program. It is worth noting as well that the proportion of students choosing family medicine was lowest among the low-tuition group.

With respect to career choice, there were reported differences between the students in low-tuition universities and the other categories. Almost one-

quarter of the students in low-tuition universities indicated a preference for a government agency career, compared to miniscule numbers in the medium- and high-tuition categories. Moreover, only 20 percent indicated a preference for private practice—less than one-half of the rate in the other two groups. After some investigation, however, it has been determined that the reported difference may well be attributable to a translation problem with the French version of the survey questionnaire. Differences in career choice may also be attributed to differences in provincial health care funding regimes and employment opportunities (e.g., salaried versus fee-for-service).

Table 12: Choice of Medical Career

Q. 9 If you had to choose your medical career today, which of the following would you choose?

Career Area	Low Tuition	% of Total	Medium Tuition	% of Total	High Tuition	% of Total	Total	% of Total
Government Agency	59	24.5%	1	0.8%	10	1.2%	70	5.9%
Int'l humanitarian aid	24	10.0%	13	9.9%	59	7.3%	96	8.2%
University affiliated	92	38.2%	58	44.3%	363	45.1%	513	43.6%
Private Practice	49	20.3%	53	40.5%	338	42.0%	440	37.4%
All other	17	7.1%	6	4.6%	35	4.3%	58	4.9%
Grand Total	241	100.0%	131	100.0%	805	100.0%	1177	100.0%

Source: Canada Millennium Scholarship Foundation and IBM Global Business Services, *Survey of Undergraduate Medical Students Enrolled in 2004–05*.

Table 13: Choice of Career Location

Q.11 Importance of Factors on Choice of Location, after Completion of Residency

Factor	Low Tuition	Medium Tuition	High Tuition	Overall
Workload life balance	4.2	4.3	4.3	4.3
Lifestyle in given community	4.1	4.2	4.3	4.2
Employment of spouse/partner	4.1	3.9	4.1	4.0
Depth of medical resources	3.5	3.6	3.6	3.6
Desire to contribute to community	3.7	3.7	3.5	3.6
Practice in area with specialties	3.2	3.6	3.6	3.5
Earnings / income	3.1	3.4	3.5	3.4
Home community	3.1	3.2	3.3	3.2
Cost of living	2.9	3.3	3.3	3.2
Join existing practice	3.0	2.9	2.8	2.8
Return of service program	2.2	2.7	2.6	2.5

Scale: 5=Very important, 4=Somewhat important, 3=Neutral, 2=Somewhat unimportant, 1=Not at all important.

Source: Canada Millennium Scholarship Foundation and IBM Global Business Services, *Survey of Undergraduate Medical Students Enrolled in 2004–05*.

When asked about the factors that would affect their choice of location after completing residency (Table 13), workload/lifestyle factors dominated the responses, with spousal/partner employment considerations also a major factor.

The key points to note are the similarity in responses across the low-, medium- and high-tuition categories and the relatively low ranking (on average) of earnings/income and cost of living. Appendix C provides more detailed responses for each of the factors.

Socio-Economic Profile

Socio-economic status was determined on the basis of an examination of the respondent's father's education level and reported parental income. In the case of father's education, there was no statistical difference by tuition category ($p = .091$). The analysis of parental income showed a borderline relationship ($p = .049$), with a higher proportion of students in the lowest and highest parental income groups coming from the medium- and high-tuition categories. This finding may reflect a "middle-class squeeze" as a result of higher tuition—a matter to which we will return in the "Discussion" section of the report. More detail about the socio-economic comparison is available in Appendix C.

It is important to recognize the limitation on self-reported estimates of parental income, including the fact that no attempt was made to adjust the reported income for differences in provincial income levels.

Table 14: Father's Education and Estimates of Parental Income

Q.31 What certificates, diplomas or degrees did your parents obtain?

Father's Education	Low Tuition	% of Total	Medium Tuition	% of Total	High Tuition	% of Total	Total	% of Total
None	14	5.8%	12	9.2%	56	7.0%	82	7.0%
High School	28	11.6%	15	11.5%	85	10.6%	128	10.9%
Non-University	61	25.3%	30	22.9%	134	16.6%	225	19.1%
Bachelor's	66	27.4%	32	24.4%	253	31.4%	351	29.8%
Master's or higher*	72	29.9%	42	32.1%	277	34.4%	391	33.2%
Total	241	100.0%	131	100.0%	805	100.0%	1177	100.0%

* Includes Master's, Doctorates, and degrees in medicine, dentistry, veterinary science and optometry.

Q.37 What is your best estimate of the total current income, before taxes and deductions, of your parental household?

Parental Income	Low Tuition	% of Total	Medium Tuition	% of Total	High Tuition	% of Total	Total	% of Total
< \$40,000	25	11.3%	19	16.7%	119	16.0%	163	15.1%
\$40,000–79,999	76	34.4%	38	33.3%	206	27.7%	320	29.6%
\$80,000–119,999	68	30.8%	22	19.3%	193	25.9%	283	26.2%
\$120,000 or more	52	23.5%	35	30.7%	227	30.5%	314	29.1%
Total	221	100.0%	114	100.0%	745	100.0%	1080	100.0%

Source: Canada Millennium Scholarship Foundation and IBM Global Business Services, *Survey of Undergraduate Medical Students Enrolled in 2004–05*.

Summary of Key Survey Findings

The survey responses indicate that:

- Medical students from low-tuition universities tend to be younger, and there are more female students in this group.
- Actual and anticipated debt levels are clearly different between students in low-tuition universities and those in medium- and high-tuition institutions, largely as a consequence of Quebec's low-tuition policy.
- The differences in debt levels appear to have little bearing on specialty choice.
- In terms of career choice, there is a clear difference in the responses of students by tuition category, but further analysis suggests the difference is related to the French translation of the survey instrument and perhaps to differences in provincial health care funding regimes and employment opportunities (salaried doctors versus fee-for-service).
- With respect to differences in the socio-economic profile of students as determined by father's education, there is no difference in survey responses by tuition category.
- There is a borderline difference in the socio-economic profile of students as measured by parental income that indicates higher proportions of both lower-SES and higher-SES students in the medium- and high-tuition categories, compared to the low-tuition category.

4. Other Considerations

This section of the report introduces a number of other elements to the discussion about the impact of tuition increases on access and career choice. First and foremost is the role of each province in setting enrolment mandates for medical education and, through a variety of mechanisms, determining the appropriate level of support for both medical education and medical students. Second is the extraordinary nature of the competition for a very limited number of spaces in medical schools. We begin with the role of the provinces.

Provincial Enrolment Mandates and Access Opportunity

In all cases, provincial authorities regulate the number of available medical spaces through a complex set of arrangements that ultimately boils down to how many “spaces” the province is prepared to fund. In the past few years, the number of available spaces has increased, but there are considerable differences among the provinces, as indicated in Table 15.

Table 15: First-Year Enrolment in Faculties of Medicine

University	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006 Planned
Memorial University of Newfoundland	56	56	56	60	62	63	63	61	60	61	61	62	61	60	60
Dalhousie University	86	84	83	86	92	86	91	86	89	86	84	94	93	92	90
Université Laval	143	143	144	132	113	114	114	132	140	155	172	185	197	211	203
McGill University	142	139	134	120	110	107	111	121	129	135	147	160	174	176	195
University of Montreal*	0	180	167	164	163	143	138	157	164	181	195	212	222	262	265
University of Sherbrooke	108	104	101	92	89	93	90	104	112	125	137	150	157	168	172
<i>Subtotal Quebec</i>		566	546	508	475	457	453	514	545	596	651	707	750	817	835
McMaster University	100	100	101	102	100	102	100	100	113	130	140	139	138	150	148
University of Ottawa	84	85	84	84	84	84	86	90	102	121	135	136	136	152	139
Queen's University at Kingston	75	75	75	75	75	75	77	76	80	90	100	100	102	101	100
University of Toronto	252	178	181	175	177	178	178	178	193	199	199	200	200	205	218
University of Western Ontario	97	96	98	98	101	99	96	97	104	118	134	132	133	133	139
Northern Ontario School of Medicine														56	56
<i>Subtotal Ontario</i>		534	539	534	537	538	537	541	592	658	708	707	709	797	800
University of Manitoba	81	75	72	73	74	75	71	75	75	88	90	89	87	94	100
University of Saskatchewan	63	62	56	57	57	56	57	51	55	60	61	60	60	62	60
University of Alberta	122	115	106	104	105	110	107	105	126	128	131	133	128	129	125
University of Calgary	74	70	72	71	76	72	81	80	101	116	113	116	105	104	125
<i>Subtotal Alberta</i>		185	178	175	181	182	188	185	227	244	244	249	233	233	250
University of British Columbia	121	121	121	120	120	120	121	121	120	128	129	128	200	225	224
Total	1604	1683	1651	1613	1598	1577	1581	1634	1763	1921	2028	2096	2193	2380	2419

* University of Montreal changed its program from five years to four years in 1992 and, thus, did not admit new students in 1992.

Source: Association of Faculties of Medicine of Canada, *Canadian Medical Education Statistics*, Table 16, various years.

Table 16—based on 2006 first-year enrolment plans—indicates that a number of medical schools have a provincial mandate to reserve a set number of available spaces for residents of the province and, in some provinces, a specific number of spaces for Aboriginal students.

It is also evident from Table 16 that the opportunity to be accepted into medical school differs markedly by province (column E), with Newfoundland and Labrador and Quebec providing considerably more spaces per capita than other provinces. To the extent that access is affected by capacity, there is considerably more *relative* capacity in those provinces than elsewhere in the country.

Table 16: Summary of Available Spaces and Opportunity

University/Province	A # of 1st-Year Places	B Resident Quota % or #	C Aboriginal Student Places	D Provincial Population Age 20–24	E D / A
Memorial University of Newfoundland	60	40	-	35,500	592
Dalhousie University (Maritimes — NB, NS, PEI)	90	81	-	124,400	1,382
Université Laval	203				
University of Sherbrooke	195				
University of Montreal	265				
McGill University	172				
Subtotal Quebec	835	775	-	501,000	600
University of Ottawa	139		8 incl. in 139		
Queen's University	100		4 incl. in 100		
University of Toronto	218				
McMaster University	148				
University of Western Ontario	139		3 incl. in 139		
University of Northern Ontario	56		2 incl. in 56		
Subtotal Ontario	800	-		806,000	1,008
Manitoba	100	90%	-	83,700	837
Saskatchewan	60	90%	6 incl. in 60	75,100	1,252
Alberta	125	85%	5* in addition to 125		
Calgary	125	85%			
Subtotal Alberta	250	213		252,100	1,008
British Columbia	224	214	5% incl. in 224	303,100	1,353
Total	2,419			2,243,300	927

Source: The Association of Faculties of Medicine of Canada, *Canadian Medical Education Statistics*, 2006, Table 2B and Table 3.

Note: The total population number for the age 20 to 24 group includes 8,400 from the Northwest Territories, Yukon and Nunavut and is based on July 1, 2005, information. Also, column E is based on available spaces (column A) as of 2006.

Student Assistance and Other Forms of Support

Tuition levels and student assistance are also important factors to consider when discussing “access” and “affordability.” Again, each provincial government plays a major role in either setting or heavily influencing the tuition regulatory regime and the level of student assistance. Although this report focuses on students enrolled in 2004–05, it encompasses students who *started* their formal post-secondary education as far back as the mid-1990s. During most of their post-secondary experience, they have been subjected to the policy initiatives of various government regimes that resulted in a morass of student assistance programs and a set of rollercoaster tuition frameworks that bordered on the bizarre. To the extent that good, solid information about the cost of university education and available financial assistance are prerequisites to students making good, informed decisions about their future course of study and pursuing their own educational goals, the evidence suggests that governments in a number of provinces have fallen far short of those basic service deliverables.⁶

Governments play a major role in the funding support of medical students in a variety of ways, including government loans, bursaries, tax credits, scholarships and employment income. The impact of these various funding supports should not be forgotten when trying to assess the relative state of financing for medical students. Each province, for example, sets its own policies and funding levels for clinical clerkships and resident remuneration, not to mention government loan and grant policies and tax policies. Residency remuneration ranges from about \$39,000 in Quebec to \$46,500 in Alberta for first-year trainees (July 2004), a gap that continues throughout the residency training period.⁷ Clerkship stipends range from \$0 in Quebec to \$6,320 in Saskatchewan (2006–07).⁸ There are also differences in post-MD clinical training fees, with Saskatchewan levying no fee, while Quebec universities charge well over \$3,000 (2006–07).⁹

Some provincial governments (Manitoba, New Brunswick) now provide tuition “tax back” credits for residents of the province who opt to practice their profession in the jurisdiction. It is beyond the scope of this study to provide a detailed comparison of the actual differences by province, but it is clear from the preceding that such differences would affect student debt loads.

6. For a review of major changes in provincial student assistance policies, see J. Berger, A. Motte and A. Parkin, *The Price of Knowledge 2006–07*, Chapter 4.

7. The Association of Faculties of Medicine of Canada, *Canadian Medical Education Statistics*, 2006, Table 5, p. 6.

8. In Ontario the clerkship stipend (\$6,000 per year) is regarded as a bursary and thus not subject to income tax. See B.E. Cummings, *Tax Tips for the Medical Student, Resident, and Fellow*, Canadian Medical Association, January 2007, p. 15 (www.cfms.org/feature_docs/Tax-Tips-2007.pdf).

9. The Association of Faculties of Medicine of Canada, *op. cit.*, Table 6, p. 7.

Physician Remuneration

The ability to finance debt loads after graduation is also a function of provincial policies, insofar as physician remuneration schedules are established (and funded) by governments. Physician remuneration data clearly indicate that physician income, on average, is well above average incomes and well above the average incomes of university graduates.¹⁰ A brief review of physician incomes may be instructive to help contextualize differences in the level of educational debt and the ability of medical graduates to handle increased levels of educational debt.

A review of physician payments in 2004–05¹¹ indicates major differences by province and by major specialty area. While it is clear from earlier analysis that, on average, students in low-tuition medical schools graduate with considerably less debt than students from medium- or high-tuition schools, it is equally clear that fee-for-service payments are distinctly different across the country, with Quebec well below the Canadian “average.”

Changes in physician remuneration over time are also important factors to consider when assessing the responses of medical students. The financial state of the profession may well influence medical students’ perception of future income and their ability to finance debt. The following commentary focuses on Ontario because those medical schools experienced the greatest increase in tuition fees and they began increasing tuition in the mid-1990s.

A review of changes in physician fee-for-service payments from the mid-1990s onward suggests little change in physician remuneration during the period of major tuition increases. In more recent years, fee-for-service payments have increased.¹² It appears then that during the period of major tuition increases, the relationship between physician payments and tuition levels changed markedly. How that change may have influenced student perceptions of debt loads and their ability to finance debt loads is worthy of further investigation. Moreover, in light of more recent increases in physician fee-for-service payments, it would be interesting to know how those changes are influencing current student perceptions of debt.¹³

Table 18: Average Physician Payment for Fee-for-Service (Gross) 2004–05

Specialty	Nlfd	PEI	NS	NB	Que	Ont	Man	Sask	Alta	BC	Cdn. Avg by Specialty
Family Medicine	\$215,931	\$220,742	\$185,448	\$211,734	\$164,568	\$213,088	\$217,390	\$238,775	\$232,742	\$198,365	\$202,481
Medical Specialties	\$314,521	\$334,107	\$206,830	\$285,549	\$189,817	\$278,094	\$216,009	\$284,063	\$276,809	\$245,174	\$248,694
Surgical Specialties	\$367,822	\$329,280	\$321,293	\$357,199	\$240,343	\$361,045	\$337,476	\$406,161	\$427,550	\$353,479	\$334,012
Overall Average											
By Jurisdiction	\$263,996	\$252,638	\$216,778	\$259,334	\$185,751	\$258,090	\$236,695	\$277,930	\$270,328	\$232,756	\$237,492
Indexed to Canadian Average											
Family Medicine	106.6	109.0	91.6	104.6	81.3	105.2	107.4	117.9	114.9	98.0	100.0
Medical Specialties	126.5	134.3	83.2	114.8	76.3	111.8	86.9	114.2	111.3	98.6	100.0
Surgical Specialties	110.1	98.6	96.2	106.9	72.0	108.1	101.0	121.6	128.0	105.8	100.0
Overall Average											
By Jurisdiction	111.2	106.4	91.3	109.2	78.2	108.7	99.7	117.0	113.8	98.0	100.0

Source: Canadian Institute for Health Information, *Average Payment per Physician Report, Fee-for-Service Physicians in Canada, 2004–05*, Canadian Institute for Health Information, Ottawa, 2006.

10. A. Rashid, *Earnings of Physicians*, Statistics Canada, Catalogue 75-001-XPE. Rashid used data from the 1980 and 1995 Census to examine changes in physician income relative to other groups. Also, see Council of Ontario Universities, *Resource Document*, 2007. Table 9.3 provides income data from the 2000 Census by level of educational attainment.
11. Readers are advised to consult the Canadian Institute for Health Information source for Table 18 for the detailed methodology used to compute the average fee-for-service payment per physician.
12. Canadian Institute for Health Information, *Average Payment per Physician Report*, various years, Ontario data.
13. Evidence is also clear that concern about attracting and retaining family physicians has led many communities in Ontario to offer additional remuneration to attract family physicians (see, for example, “The Doctor Auction,” *Kingston Whig-Standard*, December 8, 2007).

With respect to the *relative* debt repayment experience of recent graduates in health occupations (including medicine), a recent Statistics Canada study¹⁴ noted that:

“A higher likelihood of employment combined with higher earnings compensates for the fact that health graduates are more likely to have student debt and tend to owe more than graduates in other fields. However, they were less likely to report difficulties in repaying their loans, were just as likely to have paid off their loans two years after graduation and were just as likely to expect to have their loans repaid within five years of graduating.”

The preceding overview of the provincial role in influencing accessibility to medical education and the affordability of medical education indicates, reasonably clearly, that government plays a key role through a variety of policy and regulatory tools. The provincial differences in the way the tools are deployed are worthy of further investigation. For the purposes of this study, however, suffice it to say that those major differences in provincial policies/practices should be important factors to consider when attempting to assess the impact of specific factors (e.g., tuition increases) on accessibility and specialty choice.

Applicant Pools and Admission Criteria

Medicine is an extraordinarily popular program and the intended destination for thousands of high school students applying to university. In Ontario, for example, well over ten percent of university applicants indicate a medical degree as their “highest intended degree.”¹⁵ Household income information from the ACUMEN Research survey of applicants to university also indicates that, with the exception of applicants from the highest income group (>\$120,000),

the proportion of applicants indicating medicine as their highest intended degree is very similar to the other income groups. This fact suggests that at the time individuals are applying to university, there is little socio-economic differentiation in the pool of potential future applicants to medical programs, at least when considered as a proportion of the number of applicants in each income grouping. The same report also notes that more females than males indicated a medical degree was their highest intended degree (approximately 13 vs. nine percent), a fact that is reflected in the *Survey of Undergraduate Medical Students Enrolled in 2004–05* and in administrative data reported through AFMC. Finally, the ACUMEN Research report also notes “somewhat better grade averages garnered by females and respondents falling in the higher income brackets,”¹⁶ thus perhaps pointing to differences in measured academic achievement as one of the factors that helps explain the relatively high proportion of high-income students enrolled in medical schools.

Students continue to flock toward medical school, and each year the number of applicants far outpaces the number of available spaces (Figure 3). The calibre of the applicants is extraordinary: in each of the last five years, the overall scores from the Medical College Admission Test (MCAT) have increased.

MCAT test results are only part of the admission criteria used by medical schools. In many cases, the admission process includes an assessment of academic achievement (university Grade Point Average and MCAT), plus an assessment of personal characteristics/achievements through such vehicles as personal information forms, autobiographical letters and letters of reference. These vehicles are used as filters to arrive at a much smaller subset of applicants, who are then invited for interviews.¹⁷ Often, the filters are applied sequentially—academic achievement first, then personal characteristics and finally interviews. How the application of the filters

14. J. Plante, R. Ceolin and S. Ouellette, “From Aspiring to Graduating and Working in a Health Occupation,” *Education Matters: Insights on Education, Learning and Training in Canada*, Centre for Education Statistics, October 2007.

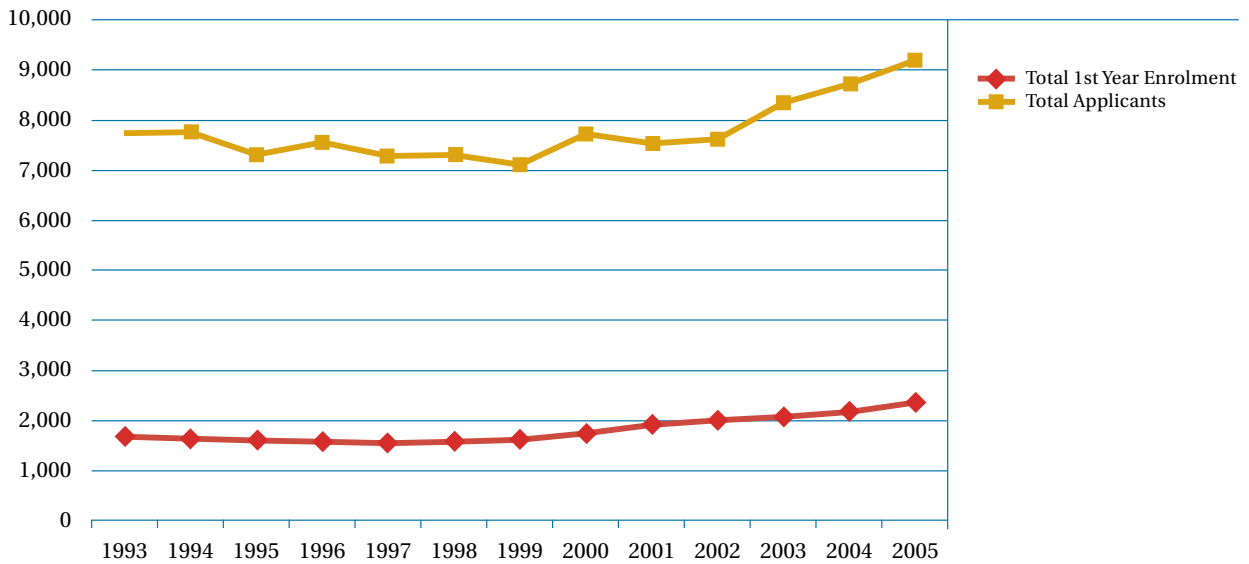
15. Acumen Research Group, *University Applicant Survey 2003*, Council of Ontario Universities.

16. *Ibid.*, p. 17.

17. Individuals interested in the detailed admission procedures are encouraged to visit the admission websites of individual medical schools.

affects the access of under-represented groups¹⁸ is far beyond the scope of this study, but it is an area that deserves further research and is yet another important ingredient in trying to understand the various factors that influence participation and access and have a bearing on specialty choice.¹⁹

Figure 3 — Number of Applicants and First-Year Enrolment



Source: The Association of Faculties of Medicine of Canada, *Canadian Medical Education Statistics, 2006*, Table 78, Canadians and Permanent Residents, and Table 16, various years.

18. Quebec medical schools, for example, apparently add 0.5 percentage points to applicant GPAs if the applicant is from rural or remote Quebec (referenced in P. Hutten-Czapski et al., “Who Gets into Medical School?: Comparison of Students from Rural and Urban Backgrounds,” *Canadian Family Physician*, September 2005).

19. Medical students are faced with another “admission hurdle” at the end of their four-year degree—that is, the application for a residency position. The competition for residency positions is fierce, with limited numbers of specialty positions available. This is yet another subject for further research.

5. Discussion: Placing the Findings in Context

The findings from this study need to be considered in the context of other research about access to professional programs. In Canada, research in this area is a relatively recent phenomenon. As tuition levels increased markedly in many provinces from the mid-1990s onward, the impact of such increases on “access” became a lightning rod for debates and ultimately sparked a number of research efforts aimed at improving the understanding of how tuition increases were affecting access to specific professional programs.

In the case of medicine, an early effort aimed at establishing the socio-economic profile of first-year medical students (Dhalla et al. 2002) concluded that:

- the socio-economic profile of first-year medical students is not representative of the Canadian population;
- minority groups, such as Blacks and Aboriginals, were under-represented, while Asians were over-represented;
- the parents of medical students were, on average, considerably better educated than the norm;
- almost two-thirds of the respondents came from families identified as living in neighbourhoods with median incomes in the top two quintiles; and
- slightly more than six percent of the students came from families living in neighbourhoods with median incomes in the lowest quintile.

The authors were able to compare their findings with a study conducted in 1965–66 and concluded that “many of the findings reported then are similar to our findings.” In summary, the authors indicated that there had been little change in the socio-economic profile in the intervening years, although they noted the significant improvement in the

proportion of women and suggested that ethnic diversity is “undoubtedly more pronounced than in past decades.”

The socio-economic profile that emerges from the survey of students in 2004–05 is consistent with the preceding findings. Regardless of tuition levels, the majority of medical students are from family backgrounds characterized by higher incomes and well-educated parents.

With respect to the impact of higher tuition on the socio-economic profiles of students, both before and after tuition increases, there has only been one Canadian study (Kwong et al. 2002) that focused solely on medical students and attempted to determine the impact of higher tuition on their socio-economic composition. Using self-reported family income as the indicator of socio-economic status and comparing students who began their studies in 1997 with those who started in 2000, the authors found a decrease in the proportion of medical students from lower-income families (<\$40,000) in Ontario. However, when compared to other medical schools (excluding those in Quebec²⁰), that finding was not statistically significant—that is, while there were differences in the family income composition of Ontario medical students in those two years, those differences were not statistically different from differences occurring at other medical schools in the country.

The present study does not allow for a comparison of changes in the socio-economic profile over time. However, it does indicate that using students’ fathers’ education level as a proxy for socio-economic status results in no difference in the socio-economic profile of students from medium- and high-tuition institutions relative to those from the low-tuition institutions. Using self-reported parental income, the present study does suggest a difference in the socio-

20. Quebec students/schools were excluded from the analysis because the quality of the e-mail address databases were poor and the response rates were judged to be too low. That is, the authors decided to exclude Quebec responses from the analysis because they “could not be confident that the data were representative.”

economic composition between low-tuition respondents on the one hand and medium- and high-tuition respondents on the other, with the latter groups reflecting a higher proportion of low-income *and* high-income students. This matter is discussed more fully later on, when comparing the findings with a study that examined the impact of tuition increases on a set of a professional programs—i.e., law, medicine and dentistry (Frenette 2005).

Results from the student portion of the first *National Physician Survey*²¹—a collaborative project involving the College of Family Physicians of Canada (CFPC), the Canadian Medical Association (CMA) and the Royal College of Physicians and Surgeons of Canada (RCPSC)—are similar to findings from the present study:

- approximately 14 percent reported parental income of less than \$40,000 (compared to approximately 15 percent in the current study), with a further 34 percent (approximately 30 percent in the current study) reporting parental income between \$40,000 and \$79,999; and
- 6.7 percent reported that their father's education level was less than high school graduation, versus seven percent in the current study.

With respect to access to professional programs in general, the University of Toronto produces an annual report that tracks, among other things, access to professional programs (i.e., medicine, law, pharmacy, dentistry) since the introduction of higher tuition (Farrar 2007). The most recent version of that annual report indicates little change in the socio-economic profile of students in professional programs at the University of Toronto.

Frenette's study, mentioned previously, examined changes in the socio-economic characteristics of students in law, medicine and dentistry in Ontario compared to other provinces over the period from 1995 to 2001. Frenette found some evidence of a middle-class squeeze in Ontario compared to other provinces—that is, over the period in question, enrolment of students from the *lowest* socio-economic group (as defined by parental education) increased, as did enrolment of students from the *highest* socio-economic group, thus resulting in a proportional decrease of students from the middle socio-economic group. In contrast, “in provinces such as Quebec and British Columbia, where tuition fees were frozen over the period, no changes in enrolment patterns by socio-economic background were registered.”

Frenette suggested that, among other factors, changes in student aid in Ontario may help explain the Ontario results. During the period in question there were considerable changes in student assistance in the province. Institutions devoted substantial amounts of the increased tuition income to needs-based student assistance. At the same time, the Ontario government tightened student assistance eligibility criteria, thereby essentially reducing the availability of student assistance for the middle-income group. Given the universities' reliance on the government student assistance program to help establish eligibility parameters, the additional university monies would have focused on those students receiving government student assistance—in other words, students from the lower income groups. The Frenette study covered the early years of major tuition change in Ontario; since that time, a variety of new provincial and federal student assistance initiatives have been introduced that help address the student assistance requirements of middle-income students in all programs.

21. The student portion of the *National Physician Survey* was administered in May and July 2004. Details of the survey are available at www.nationalphysiciansurvey.ca/nps/results/medstudent-q-e.asp.

On the one hand, the findings from the current study run counter to Frenette's—that is, using parental (i.e., father's) education as a proxy for socioeconomic status, there was no difference between the survey respondents by tuition category. On the other hand, using reported parental income, the findings from the current study are similar to Frenette's: there is a somewhat higher proportion of students from the lower and higher income levels in the medium- and high-tuition institutions relative to the respondents from the low-tuition category.

In an examination of access to law schools in Ontario, King et al. indicated that:

“...between 1997 and 2003, the proportion of Year 1 law registrants who came from homes in the lowest quintile of family income remained approximately the same and accounted for a very small share of the first-year law school enrolments. Over the same period of time, there was growth in the proportion of students in the second highest income quintile (27.7% to 33.6%). A notable change occurred in the middle quintile of family income where the proportion of first-year law registrants decreased by almost four percent...”²²

The King study suggests that tuition increases did not impact the accessibility of students from low-income families, possibly because the tuition increases were accompanied by means-tested student assistance initiatives. King's study, like Frenette's, points to a decrease in the proportion of students from the middle class—a finding that could be seen as similar to the phenomenon noted in the analysis of self-reported parental income in this study of medical students enrolled in 2004–05.

A study of dentistry students (Matthew et al. 2006) indicated that the authors “found no significant correlation between costs and average parental

education, suggesting that higher cost universities did not have an exclusionary effect on low SES students.”²³ The dentistry study established a set of benchmarks that should be of significant value in assessing the impact of further cost increases, including tuition, in dentistry.

The link between financial considerations and access to university has been examined extensively, and the results are best summed up by Patrice de Broucker in his synthesis of research findings on the topic:

“We conclude that while financial considerations do play a role in determining access to post-secondary education, they are not the only determinant, nor even the most directly important. Instead, family financial resources blend with parent's education and expectations, geography and institutional capacity to influence everyone's educational pathways from very early on.”²⁴

With respect to specialty and career choice, the present study suggests no significant difference in specialty choice between students in the low-, medium- or high-tuition categories. While there is some evidence that students with higher debt are more likely to choose surgical specialties and less likely to choose family medicine and pediatrics, the statistical relationship is non-significant. Findings from the *National Physician Survey* (2004) indicate that for some students (approximately 20 percent), the level of debt was regarded as very important in choice of specialty, although less than three percent of respondents cited it as the “most important” factor.

22. A.J.C. King, W. Warren and S. Miklas, *Study of Accessibility to Ontario Law Schools*, Social Program Evaluation Group, Queen's University, October 2004, p. 110.

23. I. Matthew et al., “The Burden of Debt for Canadian Dental Students Part 3: Student Indebtedness, Sources of Funding and the Influence of Socio-Economic Status on Debt,” *Journal of the Canadian Dental Association* 72(9), November 2006, p. 819.

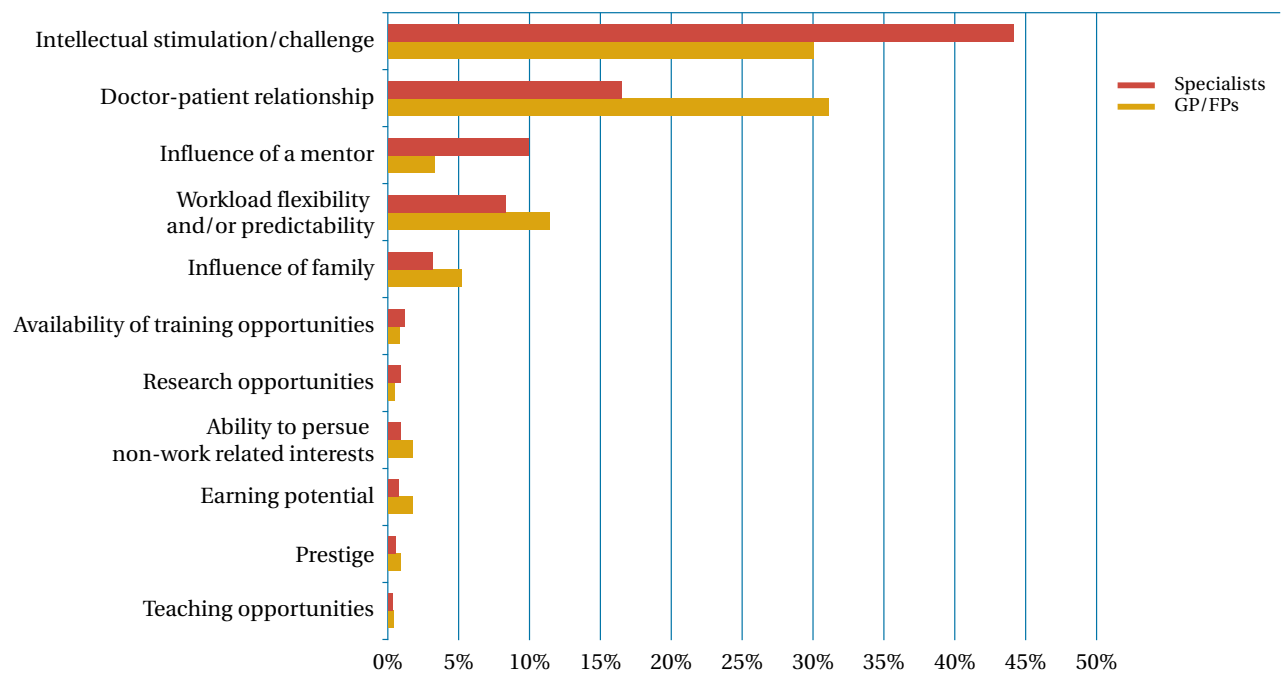
24. P. de Broucker, *Getting There and Staying There: Low-Income Students and Post-Secondary Education*, Canadian Policy Research Networks.

Studies in the United States have found little evidence, in general, connecting the level of indebtedness with specialty or career choice (e.g., Jolly 2004, Fang 2004, Cooter 2004). Cooter, in fact, suggests “that socio-economic background may be a stronger influencing factor than educational debt in specialty selection.” However, earlier studies in the U.S. noted that for a small subset of students a high level of debt does appear to have a negative impact on career

choice (e.g., Baker 1997, Kassebaum 1992, Colquitt 1996, Rosenthal 1996, Marci 1998).

Evidence from the current project indicates that there are, in fact, many non-financial factors that are ranked higher in terms of influencing “career choice”—a result that is consistent with another part of the *NPS* that focuses on practicing physicians and is illustrated in the figure below:

Figure 4 — Most Important Factor Leading to Current Career



Source: *National Physician Survey*, 2004. College of Family Physicians of Canada (CFPC), Canadian Medical Association (CMA), Royal College of Physicians and Surgeons of Canada (RCPS(C)).

6. Summary and Conclusions

The findings from this project add to the body of knowledge about the impact of tuition on access to medical programs in Canada by comparing the responses of medical students enrolled in three distinct groups of universities—those with low, medium and high tuition. These comparisons indicate:

- there is no significant difference in the socio-economic composition of the survey respondents that can be attributed to differences in tuition levels; and
- there is no significant difference in the survey respondents' choice of career specialty that can be attributed to differences in tuition levels.

There are clearly some demographic differences between survey respondents enrolled in low-tuition universities compared to those in medium- and high-tuition universities. Specifically, students in low-tuition universities are, on average, younger and have less pre-medical debt. The proportion of females is also higher in this group.

There are also some research questions that emerged from the analysis of the medical student survey data. Specifically, differences in anticipated debt levels among the low-, medium- and high-tuition groups far exceeded the differences in tuition, thus suggesting that other factors are also influencing the estimates of anticipated debt levels. Related to estimates of anticipated debt levels is a question regarding the extent to which non-repayable student assistance (e.g., scholarships, bursaries provided by various sources) is factored into estimates of anticipated debt.

This study also noted that governments play a direct role in the key factors influencing access through the establishment of capacity limits and admission quotas. Furthermore, the same governments play a direct role in factors influencing affordability through tuition regulation, the availability and form(s) of student assistance and remuneration practices/policies for medical students, residents and practicing physicians. Unfortunately, it appears the full array of government instruments within a single province is seldom synchronized—a topic that deserves further study.

The impact of institutional admission policies and the application of such policies on the demographic profile and socio-economic profile of medical students also deserves considerably more attention. And further effort should be made to more fully explore the factors that seem to influence specialty choice, including the availability of residency places.

Finally, it is important to note the existence—and potential importance—of the *National Physician Survey* noted earlier. The *NPS* was conducted in 2004 and was slated to be conducted again in 2007. As such, the results from the *NPS* should become a valuable source of information about access to medical education, changes in the composition of the student body and factors influencing specialty choice.

December 2007

Appendix A: Literature Review

I. Introduction and Overview

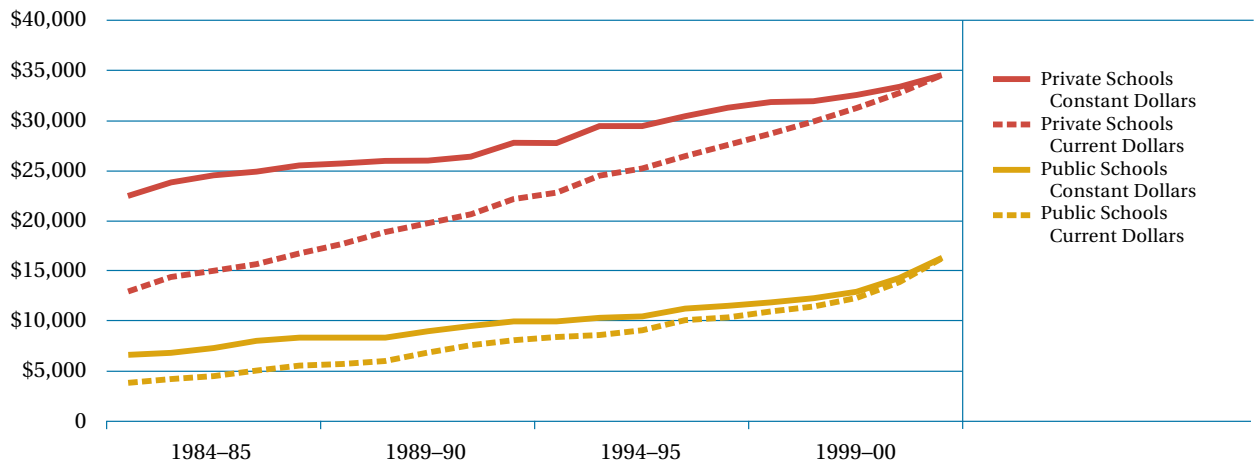
The rapid increase in medical tuition in many Canadian provinces since the mid-to-late 1990s has resulted in heightened interest in the impact of tuition increases on access to medical education and the level of debt that medical students incur during their studies. Specifically, concerns in these areas focus on: 1) whether the increased cost of attending medical school is “shutting out” potential students from lower socio-economic backgrounds, and 2) whether increased debt associated with increased tuition is affecting career choice—that is, are medical students opting for more highly paid specialties/careers because of accumulated debt associated with their medical education?

In general, the available literature indicates that: 1) increased medical tuition in Canada has had minimal impact on the participation of students from lower socio-economic backgrounds, although there is some evidence that students in the middle income range are being “squeezed,” and 2) while in-program students indicate that the level of debt *will* have some impact on their choice of specialty, there is not enough empirical evidence in Canada to determine whether that expectation actually translates into reality. Moreover, it is clear that specialty choice is influenced by a number of factors that are accorded greater importance than level of debt.

It is important to acknowledge from the outset that the socio-economic profile of Canadian medical students is quite different from that of the general Canadian populace. Medical students are drawn heavily from the two highest income quintiles, which appears to be consistent with research from the 1960s. While there have been significant changes in the ethnic and gender composition of medical students, Aboriginals and Blacks are under-represented and individuals of Asian descent are over-represented relative to the Canadian population as a whole.

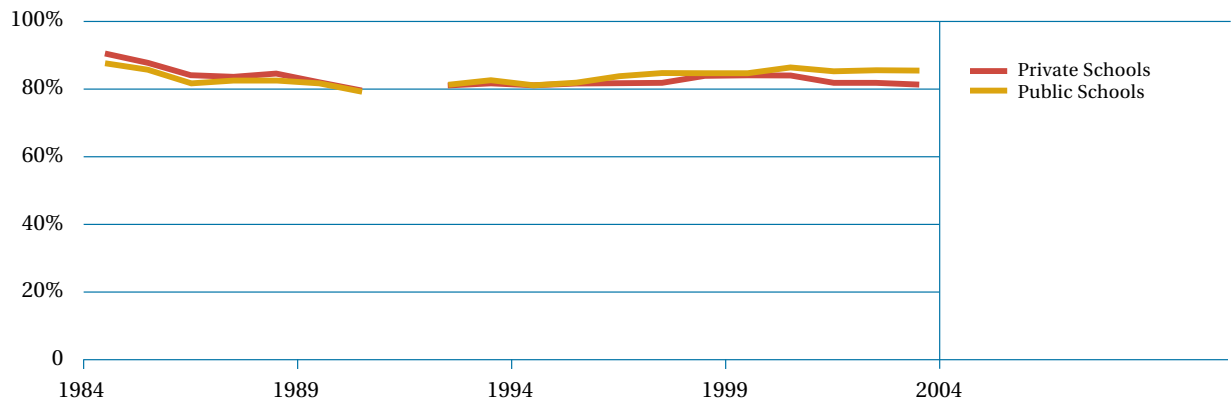
Medical tuition has increased markedly in the United States over a longer period than in Canada; consequently, U.S. studies may help to shed some light on the socio-economic impact of higher tuition and higher debt, as well as the impact on specialty choice. Figure 1, reproduced from an Association of American Medical Colleges (AAMC) study,²⁵ indicates that tuition, on average, has increased from about \$4,000 to \$16,000 in U.S. public medical schools and \$12,000 to \$35,000 in U.S. private medical schools over the past 20 years. The real increase is somewhat lower after adjusting for inflation (i.e., when using constant dollars). Growing concern is being expressed about the “accelerating” increase in tuition, especially in public medical schools.

Figure 1 — Tuition and Fees — Current Dollars and Constant 2004 Dollars



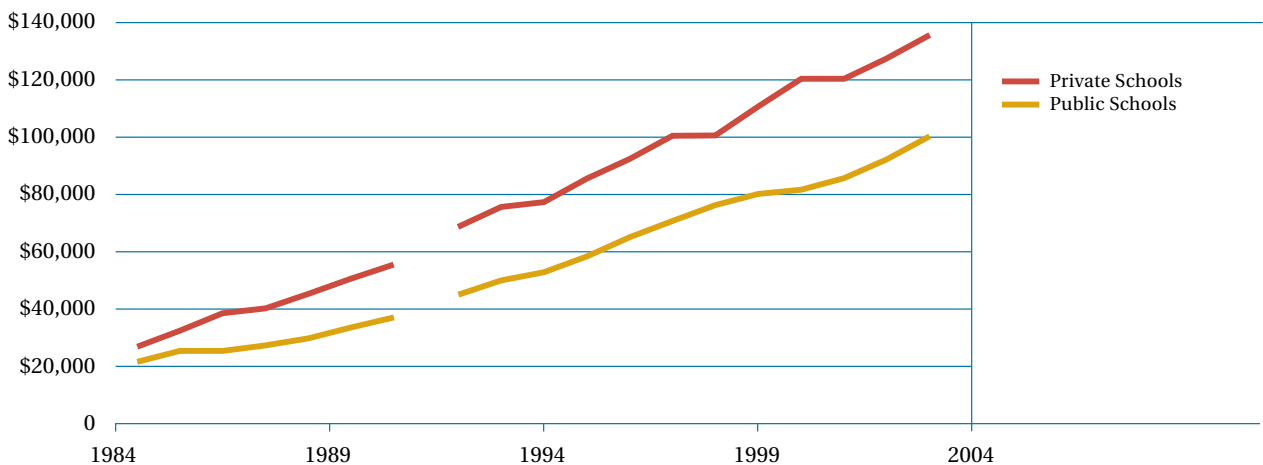
Source: AAMC Data Book.

Figure 2 — Fraction of Graduates Who Are in Debt



Note: Includes graduates with undergraduate education debt, medical education debt, or both.
Source: AAMC Graduation Questionnaire.

Figure 3 — Median Education Debt of Indebted Graduates



Source: AAMC Graduation Questionnaire.

Figure 2, from the same AAMC study, indicates that the proportion of graduates with education-related debt has remained relatively constant at over 80 percent since the mid-to-late 1980s. During the same time frame, the median amount of debt, at graduation, has increased from \$22,000 to \$100,000 in public medical schools and from \$27,000 to \$135,000 in private medical schools, as illustrated in Figure 3.²⁶

In terms of the impact on the socio-economic “mix” of students in the United States, there is little empirical evidence that increased tuition and higher debt levels have changed the mix of medical students. The most recent report from the Association of American Medical Colleges (AAMC), using longitudinal data provided from its annual *Graduate Questionnaire*, indicates that medical students are disproportionately drawn from the upper income group and that this has not changed over the past two decades:

“The fraction of medical students who come from families in the top quintile of family income has been in excess of 60 percent for at least the last two decades...while the bottom three quintiles of family income together account for only about 20 percent of medical students. Students from families in the lowest quintile of family income account for less than three percent of the class.”

In the United States, minority groups are under-represented among medical students relative to the population as a whole. That fact, coupled with what appears to be little progress in improving the situation and new studies indicating the importance of increased diversity in the healthcare workforce, has led to renewed interest in the factors affecting minority representation. Recent application and enrolment data indicate that minority enrolment in medical schools has increased over the past few years.²⁷

In the case of specialty choice, the same AAMC study cited previously stated that:

“It would be reasonable to assume that graduates with high indebtedness would gravitate toward the specialties that promise greater incomes. There have been many studies that have looked for a relationship between indebtedness and specialty choice, but there is as yet no convincing evidence of a connection.”

It is clear that student indebtedness is a major concern in the United States, and there are continuing commentaries about the *potential* impact on career choice. It is equally clear that the lack of diversity in medical schools is of growing concern, although it is recognized that the financial aspect—i.e., the cost of attending medical school—is but one of the factors that must be addressed. The empirical evidence to date suggests that the significant increase in tuition over the past two decades has not had a demonstrable impact on the socio-economic characteristics of medical students nor on their choice of specialty. There is, however, some evidence that certain sub-groups of medical students (those with high debt loads, family responsibilities and characteristics associated with a lower socio-economic background) are more likely to indicate that debt has influenced their career specialty choice. Finally, there is some evidence that major changes in student aid programs in the 1980s increased the availability of loan funds, which in turn contributed to the increase in tuition and indebtedness.

More recent data from the AAMC *Graduate Questionnaire* indicate that lifestyle, mentor/role influence and opportunities for fellowship training are by far the most important factors influencing specialty choice, with “high levels of educational debt” ranked relatively low. Specifically, in response to the question “How important were the following factors in determining your specialty choice?”, 70 percent of respondents indicated that “lifestyle” was either a moderate or strong influence, 75 percent indicated that “mentor/role model” was either a

26. Results from the 2004, 2005 and 2006 surveys continue to show increasing debt levels. Specifically, average educational debt increased from approximately \$115,000 to \$130,000, with 13.3 percent of survey respondents reporting “no debt” (see www.aamc.org/data/gq/allschoolsreports/2006.pdf).

27. Association of American Medical Colleges, as reported in *The Chronicle of Higher Education*, November 5, 2004. For more recent data, visit the Association of American Medical Colleges website at www.aamc.org.

moderate or strong influence and 65 percent indicated that “options for fellowship training” was either a moderate or strong influence. In comparison, “high levels of educational debt” was cited by only 7.4 percent of respondents as a strong influence, while a further 16.5 percent cited it as a “moderate” influence.²⁸

Another country that has experienced major increases in medical tuition is New Zealand. Research about career choice and specialty choice in that country is “mixed,” with two studies suggesting financial considerations had a major impact on career choice, while a third study indicated financial considerations were of considerably less importance. More recent studies have pointed to changes in student assistance, medical student stipends and remuneration for doctors that have improved the overall financial situation.

The following review of specific reports and research studies provides a summary of the work that has been conducted in Canada, the United States and New Zealand over the past 20 years, beginning with Canadian studies, in reverse chronological order.

II. Canadian References

D. Farrar, *Report of the Vice-Provost, Students: Student Financial Support, University of Toronto, January 2007*

The University of Toronto publishes an annual *Student Financial Support* report as part of the reporting requirements associated with its Policy on Student Financial Support. The most recent report (2005–06) was published in early 2007 and concludes that:

“We believe that the data on the student aid provided by the University, and the survey results, demonstrate that the University continues to be accessible to students from minority and less advantaged socio-economic backgrounds, as measured by parents’ level of education and income, and that the University continues to meet its obligations under the Policy on Student Financial Support.”

As part of the reporting requirements, the University of Toronto provides summary information about the socio-economic profile of students in law, medicine, dentistry and pharmacy programs. Appendix 2 of the report provides a five-year picture of students in those programs and indicates a reasonably stable socio-economic profile, using self-reported estimates of parental income, father’s education and mother’s education. There are recognized limitations associated with self-reported parental income data, and the report notes that the University is reviewing the “format and content of the report and the methods used to measure accessibility indicators, especially parental income.”

M. Frenette, *The Impact of Tuition Fees on University Access: Evidence from a Large-Scale Price Deregulation in Professional Programs, Statistics Canada, September 2005*

Using data from the 1995 and 2000 *National Graduate Survey (NGS)* and the associated two-year follow-up surveys, Frenette’s study focuses on the period 1995–96 to 2001–02 and examines the impact of major tuition increases in Ontario on professional school enrolment relative to other provinces where tuition policies were characterized by limited or moderate increases in the same period. For the purposes of the study, Frenette combines law, dentistry and medicine together.

During the period in question, enrolment in those professional programs (combined) increased by a reported 21 percent. Frenette sets out to determine “which students filled these extra spaces” (p. 7). In defining “which students,” Frenette’s focus is on determining changes in the socio-economic mix of students, using parental education as a proxy for income data. The *NGS* provides the opportunity to track graduates and determine what they were doing two years after completing their degree. From those data, Frenette develops a probability measure of enrolment in professional programs based on a set of variables that includes the socio-economic status of the student (using the proxy of parental education):

28. Association of American Medical Colleges, *Medical School Graduation Questionnaire*, 2006.

“The findings suggest that enrolment patterns by socio-economic background change substantially in Ontario, where tuition fees increases were largest. Specifically, enrolment rose among Ontario students whose parents held a graduate or professional degree. However, enrolment also rose among Ontario students whose parents had no post-secondary qualifications. The only group that saw a decline in enrolment consisted of Ontario students whose parents had post-secondary qualifications below the graduate or professional level. In provinces such as Quebec and British Columbia, where tuition fees were frozen over the period, no changes in enrolment patterns by socio-economic background were registered.”

In effect, Frenette finds some evidence to suggest that there is a “middle-class squeeze” underway, whereby students defined as low income improved their chances of enrolling in a professional program and students from the upper-income group (as defined by parental education) appear to have improved their chances as well. The author suggests that the improvement among the low-income group may be attributable to improved student aid and increased capacity. Noting the decrease in the middle-income group, the report suggests that “it is possible that some students in this group either could not afford or chose not to pay the higher fees, and did not qualify for as much student aid as students from less educated families.”

Limitations of the study include the relatively small number of observations of those students that entered professional programs (1.2 percent of the class of 1995, and 1.6 percent of the class of 2000) and the use of parental education as a proxy for family income. However, the author refers to other research that validates the use of parental education as a proxy.

National Physician Survey (NPS): Workforce, Satisfaction and Demographic Statistics Concerning Current and Future Physicians in Canada (www.nationalphysiciansurvey.ca/nps/home-e.asp)

The *NPS* is a collaborative project involving the College of Family Physicians of Canada (CFPC), the Canadian Medical Association (CMA), and the Royal College of Physicians and Surgeons of Canada (RCPSC). The core components of the project include: 1) a survey of Canadian physicians, residents and medical students every three years, with the first survey completed in 2004, and 2) the development and maintenance of a workforce database. The stated goals of the *NPS* are as follows:

- to better understand the range and scope of services that future physicians in Canada intend to provide;
- to enable comparisons between practicing physician practice patterns and future physician practice intentions;
- to better predict the functional specialties and career paths of future physicians;
- to identify potential differences between future and current physicians in relation to intended workload, practice setting and preferred remuneration modes by age and sex and to be able to track these over time;
- to identify trends in relation to physicians’ regional/familial/environmental backgrounds and where they eventually settle to practice; and
- to provide valid and current background information for physician training programs and the medical student/resident selection process, as well as the physician recruitment process in Canada (www.nationalphysiciansurvey.ca/nps/aboutus/goals-e.asp).

To date (September 2007), the *NPS* survey data for medical students and residents have not been the subject of much analysis. However, tabular data are available and the CMA has produced a summary table that compares the results of the *NPS* with earlier CMA studies (discussed below—see Dhalla et al. and Kwong et al.).

The table developed by the CMA indicated:

- i) major and growing differences in medical tuition between Ontario and the Rest of Canada (ROC) from 1997 to 2004;
- ii) a decrease in the proportion of first-year students from low-income families, with a greater decline in Ontario relative to the ROC;
- iii) increased reporting of financial considerations/debt as potentially affecting choice of specialty, with a greater increase in Ontario relative to the ROC; and
- iv) greater concern in 2004 about debt levels influencing the choice of practice location—with the increase again somewhat higher in Ontario than in the ROC.

Limitations with the preceding are:

- i) the table compares information from different studies;
- ii) family income is self-reported;
- iii) it does not appear that regional/provincial differences in family income are taken into account; and
- iv) the sample size in the three referenced studies is different.

The survey responses in the *NPS* provide a largely untapped source of information about medical students that would shed considerable light on the relationship between tuition and debt, debt levels and career choice, and the socio-economic profile of students in Canadian medical schools. As of September 2007, the data available on the *NPS* website indicate that:

- over 20 percent of medical student respondents indicated that debt levels are either “very important” (19 percent) or the “most important factor” (2.6 percent) in choice of specialty;
- earning potential was cited by almost 25 percent of respondents as “very important” (22.6 percent) or the “most important factor” (1.8 percent) in choice of specialty;

- close to 50 percent of respondents indicated that their financial situation was fairly stressful (33.6 percent), very stressful (11.2 percent) or extremely stressful (4.1 percent); and
- approximately 14 percent reported parental income of less than \$40,000.

I.A. Dhalla et al., “Characteristics of First-Year Students in Canadian Medical Schools,” *Canadian Medical Association Journal* 166(8), April 16, 2002 (www.cmaj.ca/cgi/content/full/166/8/1029)

This report focuses on determining the socio-economic characteristics of Canada’s first-year medical students relative to the general Canadian population. The method of data collection was an Internet-based survey of all first-year students at Canadian medical schools, excluding those in Quebec. Students at the four medical schools in Quebec were excluded due to incomplete e-mail addresses and consequent lack of confidence in the survey results. Students were asked their age, sex and ethnic and educational background and were also asked for estimates of their family income. Those estimates of income, along with the student’s postal code at the time of high school graduation, were used to determine socio-economic status. Postal codes were mapped to census data to provide an indication of family income that could then be compared to the estimates provided by the students. The response rate for the survey was 80.2 percent (981 of 1,223 first-year students).

The survey results indicate that the socio-economic profile of first-year medical students is not representative of the overall Canadian population. Minority groups such as Blacks and Aborigines are under-represented, while Asians are over-represented. The parents of medical students are, on average, considerably better educated than the norm. Almost two-thirds of the respondents come from families identified as living in neighbourhoods with median incomes in the top two quintiles, while slightly more than six percent come from families living in neighbourhoods with median incomes in the lowest quintile. The self-reported household income data indicate that about 15 percent of the students reported family household income of less than

\$40,000, compared to almost 40 percent of Canadian households. Well over 50 percent of the respondents reported household income of \$80,000 or more, compared to about 20 percent for Canadian households overall. The authors note that the household income information was self-reported and thus acknowledge that this was a limitation in the study.

The authors compare their findings with a study conducted in 1965–66 and conclude that “many of the findings reported then are similar to our findings.” In summary, the authors indicate that there has been little change in the socio-economic profile in the intervening years, although they note the significant improvement in the proportion of women and they suggest that ethnic diversity is “undoubtedly more pronounced than in past decades.”

J. Kwong et al., “Effects of Rising Tuition on Medical School Class Composition and Financial Outlook,” *Canadian Medical Association Journal* 166(8), April 16, 2002 (www.cmaj.ca/cgi/content/full/166/8/1023)

This study focuses on determining whether the rise in medical school tuition fees in Ontario since 1997 has affected the demographic characteristics and financial outlooks of medical students in Ontario relative to medical students in other provinces.

Using an Internet survey, all medical students across Canada were asked their age, sex, self-reported family income and the first three digits of their postal code at the time of high school graduation. Students were also asked the importance of financial considerations in choosing a specialty and location of practice. This survey was part of the same research project described above in Dhalla et al. (“Characteristics of First-Year Students in Canadian Medical Schools”). Due to problems with the response rates and composition of respondents from Quebec medical schools, the Quebec responses were excluded from the analysis. Nevertheless, the number of useable responses totalled almost 3,000—a response rate of approximately 68 percent.

The authors conclude that, on average, Ontario medical students reported larger increases in *expected* debt at graduation compared to students at the control group of medical schools (i.e., all non-Ontario

medical schools, excluding Quebec). Also, students in Ontario medical schools reported increased consideration of finances in deciding what and where to practice. They also reported much higher levels of financial stress than students in other provinces, with many considering their financial situation to be “very” or “extremely” stressful. The authors note that in Ontario the proportion of students from lower-income families (i.e., <\$40,000) was lower in 2000 than in 1997, but the finding was not statistically significant compared to the control group. The authors also note that despite the significant increase in tuition, the overall applicant pool increased from 1997 to 2000.

D.A. Sim, *Report of the 1999 Survey of Medical Students, Department of Epidemiology and Biostatistics, Faculty of Medicine and Dentistry, University of Western Ontario* (unpublished)

This study is often cited in the literature as evidence of the impact of tuition increases on access to medical school. In the fall of 1998, tuition for first-year medical students at the University of Western Ontario was increased to \$10,000. This report examines the socio-economic profile of medical students at the institution in 1998–99. Given the increase in tuition in the fall of 1998, the study specifically focuses on “whether or not the first-year students differed from their predecessors with respect to family income, education and occupation.”

The methodology included an in-class survey of all first-, second- and fourth-year students (third-year students were excluded because they were on clinical rotations and thus not accessible), as well as the use of census tract income data to compare self-reported income information with the census tract results. In addition to family income information, students were asked about current living arrangements, previous education, anticipated debt loads, current debt loads, parental education, parental occupation and parental postal code at the time the student was admitted to medical school. Sim’s findings are summarized as follows:

“There were clear differences in educational level of the students’ mothers by year and tuition group, and of fathers’ education level

by tuition group. Fathers' occupation scores were significantly higher in the first-year students... Family income... showed a statistically significant difference by year and tuition group. When [postal code data] were considered, the association between 'income' and tuition fees paid was not found."

The author makes a point of indicating that the family income data were self-reported and that there could thus be a bias in the data. The study detects clear differences in parental education and parental occupation between first-year students and second- and fourth-year students. The family income data are not conclusive because of the methodology limitations, however. The University of Western Ontario conducted a follow-up analysis using more refined postal code data and concluded that there was no statistical difference in family income between students in first year and those in other years.

III. References from the United States

P. Tonkin, "Effect of Rising Medical Student Debt on Residency Specialty Selection at the University of Minnesota," *Minnesota Medicine* 89, June 2006

Based on a survey of graduating students from the classes of 2000, 2001, 2002 and 2003 at the University of Minnesota, this study examines the correlation between debt levels and specialty choice. The University of Minnesota Medical School is noted as one of the most expensive public schools in the United States. It operates on two campuses—Twin Cities and Duluth—with the latter more oriented to rural medicine and family medicine/primary care.

The author finds that Duluth graduates who entered specialties had considerably more debt than those students who entered family medicine residencies. From that correlation the author concludes that "in short, medical students from Duluth with more debt chose specialties with increased earning potential more often than students who graduated with less debt." He thus argues that educational debt is influencing graduates to consider specialties other than family medicine due to the possibility of higher earnings. The author also notes that there are a variety of factors that influence specialty choice, "including personal interest, lifestyle and prestige."

S.A. Slater and A.B. Kimball, "Rising Educational Debt Levels in Recent Dermatology Trainees and Effects on Career Choice," *Journal of the American Academy of Dermatology* 54(2), February 2006

This study, involving a survey of approximately 950 graduating dermatology residents over the period 1999-2004, focuses on determining whether there are career choice differences among the graduating residents that could be attributed to debt levels. Yearly response rates ranged from 62 to 88 percent. In this study, "career choice" meant either solo practice or pursuing a fellowship (academic) toward a career in academe. The study notes the increase in educational debt over the period but concludes that "debt did not appear to influence career choices of dermatology residents."

Medical Educational Costs and Student Debt: A Working Group Report to the AAMC Governance, Association of American Medical Colleges, March 2005

The Working Group was established following the release of *Medical School Tuition and Young Physician Indebtedness* (2003) and in response to a request from the AAMC Organization of Student Representatives. In its report, the Working Group notes:

"At this time, repaying the current levels of educational indebtedness does not represent an insurmountable burden for the average physician beginning clinical practice, and a medical education continues to be a sound investment for the future physician. However, if educational debt continues to rise at current rates and physicians' incomes continue to barely keep pace with inflation, there is realistic concern for the future affordability of medical education."

The results of the Working Group's efforts cover a broad spectrum of financial concerns: the need for greater transparency and predictability in tuition setting; more financial education for medical students; more needs-based student support; and for medical schools to constantly review medical education costs. The Working Group also recommended that:

“Funding for medical education should include more creative ways for physicians-in-training to provide service to the uninsured and underserved of this country as part of their understanding of, and commitment to, the important social contract between the medical profession and society.”

Report of the Sullivan Commission on Diversity in the Healthcare Workforce, *Missing Persons: Minorities in the Health Professions*, September 2004

Funded by the Kellogg Foundation through the Duke University School of Medicine, the Sullivan Commission was “given the formidable, and unique, task of identifying and understanding the barriers to achieving diversity in the health professions and then to finding solutions.” Using commissioned studies, published data and evidence from hearings in various parts of the country, *Missing Persons* provides a blueprint for improving the representation of minorities in the health professions.

In developing its blueprint, the Commission recognized that there are many factors affecting the composition of the healthcare workforce, including major shortcomings in the education and economic opportunities afforded minorities. Those shortcomings combine to create significant hurdles for minority students, and the Commission outlines a series of measures to increase the pipeline of qualified students. With respect to finances, the Commission states that the “burden of financing an education in the health professions has put the dream of becoming a health professional beyond the reach of far too many qualified, under-represented minority students.” Citing evidence from other studies, the Commission notes that minority students who enter health profession programs tend to carry more debt from their undergraduate studies. That reality, in turn, may affect persistence and performance and influence career choice. The Commission calls for strategies aimed at lowering debt levels through loan forgiveness programs and increased grant programs. While financial factors are cited as a barrier, the Commission also acknowledges that the lack of diversity is a function of many factors.

R. Cooter et al., “Economic Diversity in Medical Education: The Relationship Between Students’ Family Income and Academic Performance, Career Choice, and Student Debt,” *Evaluation and the Health Professions* 27(3): 252–64, September 2004

This study examines the relationship between parental income and specialty choice, accumulated debt, and academic performance of Thomas Jefferson University medical graduates for the period 1992 to 2002. The study involves the review of almost 1,500 graduates, representing about 60 percent of total graduates over the period and about 90 percent of those applying for financial aid. Findings of particular interest include:

- “Those planning to become family practitioners were more likely to come from lower rather than higher income families, and those from high-income families were more likely to pursue surgery and surgical specialties.”
- “The data of the current study do not demonstrate support for the concern that higher educational debt acts as a deterrent to choosing primary care specialties.”
- “The findings of the current study suggest that socio-economic background may be a stronger influencing factor than educational debt in specialty selection.”

The authors note the importance of existing student financial assistance programs in the recruitment and support of students “most likely to succeed and ultimately benefit the profession.”

D. Fang, “An Analysis of the Relationship between Medical Students’ Educational Indebtedness and Their Careers in Research,” *Analysis in Brief* 4(1), AAMC, June 2004

Fang’s study is aimed at determining whether educational indebtedness is resulting in shortages of physician-scientists. Based on a review of over 200,000 medical graduates from 1980 through 1993 and tracking their careers to 2001, Fang determines the number of medical graduates who had accepted faculty appointments, and he is able to determine the extent of research responsibility associated with the appointment (i.e., primary, significant, insignificant). By comparing the educational debt of those

physician-scientists with other medical graduates, Fang observes:

“...that the mean level of debt between graduates who had faculty appointments with research responsibilities and graduates who had no faculty appointments is not statistically significant for almost all cohorts.”

After conducting a variety of analyses on the data, Fang concludes that the “impact of educational debt on the decisions of graduating medical students to pursue research careers may not be as significant as it is commonly perceived [to be].”

P. Jolly et al., *Medical School Tuition and Young Physician Indebtedness, Association of American Medical Colleges, March 23, 2004*

This report builds on work by Kassebaum et al. (1996—see below) describing what happened to tuition and debt levels in the decade from 1985 to 1995. Trends identified in the earlier study are confirmed, and acceleration in the rate of increase for both tuition and debt is identified. Jolly et al. focus on the amount of debt carried by young physicians when leaving American medical schools and the impact of debt levels on the career choice and career planning of students. The study notes that while tuition has increased, the amount and availability of loans with generous repayment terms has increased as well, thus apparently keeping medical school accessible to all students:

“Loans are readily available, however, and repayment terms are generous. It seems clear that medical school graduates can repay the loans [and] if they stretch the payments out over 30 years, the payments can be accommodated within the income of even primary care physicians. A medical education remains an excellent investment.”

The authors use a variety of sources in conducting this research, including the American *Medical School Graduation Questionnaire (GQ)* and data on revenues and expenditures collected by the AAMC Liaison Committee on Medical Education (LCME). The *GQ*, administered annually to all graduating medical

students in the United States since 1978, had a response rate of 90 percent for 2003 and total responses of nearly 14,000. The AAMC LCME collects data on the revenues and expenditures of U.S. medical colleges, financial assistance, grants, loans, work-study and educational indebtedness for medical students.

As cited at the beginning of this literature survey, the AAMC has stated that “there is as yet no convincing evidence of a connection” between debt levels and specialty choice. Yet as can be seen from the following, Jolly et al. suggest that it is *possible* that debt levels will have a greater impact on specialty choice in the future, if they continue to increase:

“Perhaps one reason for the lack of a major effect of indebtedness on specialty choice might be that the higher practice incomes of the more specialized disciplines are offset, at least in part, by the longer training times they generally require. A graduate with a large amount of debt may be motivated to choose a discipline where it is possible to begin practice sooner. The motivations of graduates in choosing a specialty involve a number of factors—lifestyle, intellectual challenge, desire to serve and employment opportunities, as well as income level and required training time. As indebtedness goes higher and higher relative to income, however, it is possible that there may be some threshold beyond which specialty choice will be affected.”

Accordingly, the study suggests that students graduating with a high level of debt will need to put greater emphasis on future income potential and that this *may* lead them toward specialty practices where remuneration is high and thus worsen “physician distribution problems” (e.g., lack of physicians in rural areas and family physicians).

The report concludes with cautionary notes about the possible future impacts of rising tuition:

“Increases in tuition seem likely to continue, and increasing indebtedness is almost a certainty. While loan repayment is not yet a serious hardship for most physicians, contin-

ued increases in tuition and fees may hinder recruitment of a diverse class and may eventually even lead to difficulty in filling the entering classes with well-qualified students.”

Institute of Medicine (IOM), *In the Nation's Compelling Interest: Ensuring Diversity in the Health Care Workforce* (2004)

The Institute of Medicine's study examines the institutional and policy-level barriers to diversity in the healthcare workforce. It provides a set of recommendations that range from improvements in primary and secondary education for under-represented minorities to specific recommendations regarding loan forgiveness, tuition reimbursement and increased funding for diversity initiatives in higher education. Of particular note is the reference to the negative impact of lawsuits challenging affirmative action programs—a reminder of the importance of recognizing the complexities associated with public policy aimed at addressing specific shortcomings. Most of the information in the study is taken from past studies and reports and reflects the downturn in minority applicants and registrants that characterized the 1990s.

A. Widge and A. Christensen, *2003 Report of the American Medical Association-Medical Student Section (AMA-MSS) Task Force on Medical Student Debt, Final Draft* (www.ama-assn.org/ama1/pub/upload/mm/15/debt_report.pdf)

This report begins by providing an analysis of the current situation facing medical students and characterizes the medical student debt situation as being at a “crisis point.” The report makes reference to the amount tuition has climbed relative to inflation and the amount of after-tax salary that an average resident must spend to repay student loans (40 to 50 percent), concluding that this is a “crushing burden” that will worsen unless immediate action is taken.

Much of the data and information of this report come from various branches of the American Medical Association (AMA) and the American Association of Medical Colleges (AAMC). There are also many contributions from data collected from U.S.

Government agencies, including the Internal Revenue Service, the Department of Health and Human Services and the National Institutes of Health.

The conclusion of this report is in the form of recommendations that the Task Force deems should be implemented immediately. These include actions to be taken by the AMA and AMA-MSS and can be summarized as follows: a continuation of consolidation programs; expansion of deferment periods; and broadening of the definition of economic hardship used to determine eligibility for student loan deferment. Also, the report states that the AMA should support the Higher Education Affordability and Equity Act, which would raise income thresholds and deduction limits for student loan interest tax deduction. The Task Force also recommends active solicitation of funds for more medical student scholarships.

The report's concluding section, entitled “Long-Term Actions,” states that there is no clear path to sustainable medical education funding and that more data and studies are necessary on what options would be most acceptable to policy-makers, medical schools, the public and the stakeholders. They recommend five studies that must be done to fully understand the current situation and possible solutions:

- 1) Potential new sources of graduate medical education funding and ways to increase resident salaries.
- 2) The feasibility of and strategies for creating new or expanded loan programs for health professionals.
- 3) The feasibility of earmarking federal funds for undergraduate medical education for the purpose of reducing medical school tuition.
- 4) The need for non-primary-care physicians in underserved areas, focusing on how the National Health Service Corps (NHSC) and similar loan repayment programs could feasibly be expanded to cover specialties beyond primary care. The NHSC offers student aid and loans with the understanding that those who accept a NHSC loan agree to work in primary care (public health, clinics, etc.) until the loan is repaid in full. They offer a very low interest rate (five percent) and deferment options for up to four years after completion of schooling. This type of system ensures that students can afford schooling (the loan is meant to

cover tuition, fees, books and limited living expenses) and commit to work in primary care.

- 5) Appropriate methods for calculating the value of clinical work performed by medical students and taking such calculations into account when determining the cost of educating a medical student.

The final recommendation is made under the assumption that medical schools underestimate the actual cost of medical education when making presentations to funders. If that is the case, then it is the students who carry the extra burden of cost. It also implies that unpaid clinical work done by medical students as a necessary part of their curriculum should be rewarded, either monetarily or through tuition deduction.

T.J. Ley and L.E. Rosenberg, “Removing Career Obstacles for Young Physician-Scientists—Loan Repayment Programs,” *New England Journal of Medicine* 346(5): 368–72, January 31, 2002

This commentary offers a look at the factors contributing to shortages of physician-scientists and provides an interesting perspective from within the profession. The authors present evidence of the decline in the number of physician-scientists and clearly indicate that fewer physicians are choosing the physician-scientist career path, which, in combination with an aging demographic, is leading to shortages in the number of required physician-scientists, especially patient-oriented physician-scientists.

The authors make a distinction between individuals classified as “late bloomers” (i.e., individuals with a M.D. degree who decide to pursue a research career during residency) and those who have pursued a medical-scientist training program as a course of study and graduate with a combined M.D.-Ph.D. degree. Basically, the authors suggest that late bloomers will be increasingly less likely to pursue a research career because of increasing M.D. debt loads and relatively low research salaries. M.D.-Ph.D. graduates, on the other hand, will likely have considerably less debt because, as graduate students, they receive stipends each year, thus making the physician-scientist career more palatable.

The authors note that “no survey has yet been performed to assess the influence of debt on the career choices of residents and fellows [contemplating a career as a physician-scientist].” Yet they go on to say: “However, common sense and the economic reality suggest that this factor must play a large part in the choices made by heavily indebted young physicians.”

While an expansion of M.D.-Ph.D. programs is a potential solution to the shortages, the authors suggest that since “most graduates of medical-scientist training programs ultimately perform basic or disease-oriented research, doubling their number would be unlikely to have a strong effect on patient-oriented research.” Their answer to shortages of patient-oriented physician-scientists is a loan repayment program designed for late bloomers. In fact, there is such a program already, and the authors essentially argue for broader eligibility guidelines. They are also quick to note that “although medical school indebtedness is a major obstacle for many young people who are considering this path [i.e., becoming physician-scientists], the long period of training and the uncertainty of success are also deterrents.”

There are many commentaries such as this one which point out that increasing levels of indebtedness *must* be a factor in career choice yet offer little evidence and often note that there are a number of additional factors that need to be addressed. This commentary is also a good example of the existence of “sub-markets” within the medical profession. Refer to Fang (2004—see above) for a review of the evidence regarding debt levels and career choice for physician-scientists.

C.D. Marci and T.G. Roberts, “The Increasing Debt of Medical Students: How Much Is Too Much?,” *The Journal of the American Medical Association* 280(21): 1879–80, 1998

This study is based on a survey of second-year medical students at the Harvard Medical School in four successive years (1995 through 1998). Over 60 percent of students reported projected debt of over \$75,000. Actual financial aid figures indicated that 57 percent of the graduating class of 1997 and

56 percent of the graduating class of 1998 had debt greater than \$70,000.

Students were asked to indicate the influence of debt on choice of specialty and career path. The results suggested that there is “a large and substantial effect of educational debt on attitudes and prospective future decision making about career choices at the medical student level.”

S. Baum, *Graduate and Professional Student Borrowing: Are Earnings High Enough to Support Debt Levels?*, Nellie Mae Foundation, 1999

This report is based on data obtained from the 1998 *National Student Loan Survey* and involved respondents from all fields of study. The overall response rate for the survey was below 50 percent, and the majority of responses (62 percent) came from three states—New York, Massachusetts and California. The survey focused on individuals who had started repayment between 1993 and 1996 and was administered in the spring and summer of 1997.

In general, Baum finds that monthly payments were higher than acceptable, with 22 percent of graduate students spending over one-fifth of their monthly income on loan repayment.

Responses from those who had graduated in the fields of law or health/medicine showed that even though they paid a higher percentage of monthly income on loan repayment, they maintained a high standard of living. The author notes that “they are clearly reaping the benefits from the investment made in education.” With average earnings of \$38,000 yearly, those with degrees in law and medicine have a much higher starting salary than those in most other fields. However, graduates with law degrees had a harder time with debt load than those in medicine. Graduates who had been repaying loans for three years were asked if it had gotten easier over time. In medicine, 25 percent said it had gotten easier, while 30 percent said it had not; in law, only 18 percent said it had gotten easier, and 46 percent said it had not.

The report concludes that most law/medicine graduates have a monthly income/loan payment ratio below ten percent and higher earnings than those in other fields. Debt payments and a high standard of living appear to be affordable. Accordingly,

despite growth in the amount of indebtedness, the author concludes that degrees in law and medicine are still very good investments.

D. Kassebaum et al., “On Rising Medical School Debt: In for a Penny, In for a Pound,” *Academic Medicine* 71(10): 1123–34, October 1996

This study examines the increase in medical student indebtedness between 1985 and 1995 and assesses the impact (on indebtedness) of factors such as tuition increases, undergraduate debt, older students, longer times to graduation, changes in parental income and other educational costs and living expenses. Using data from a variety of sources, such as the annual AAMC *Medical School Graduation Questionnaire (GQ)* the *Matriculating Student Questionnaire* and the *Liaison Committee on Medical Education (LCME)* questionnaire on student financial aid, the authors explore the causes and consequences of student indebtedness in some detail.

The study finds that over the period in question student debt in public medical schools increased at about the same pace as tuition (approximately 60 percent). On the other hand, in private medical schools student debt increased at more than twice the rate of tuition (66 percent versus 30 percent). As a consequence of higher educational costs and the increased availability of financing, more students entered medical school intending to finance their education with loans rather than personal or family resources. The report also notes a decrease in the proportion of students with pre-medical debt.

With respect to factors influencing the increase in debt, the report indicates that “on a national scale, the influences of medical school debt on longer graduation times, the growing number of women students, greater racial-ethnic diversity, and the admission of more older students were negligible or small.” Interestingly, the study finds that the average parental income of medical students has increased over the past decade, thus indicating that the increase in indebtedness did not reflect a downturn in the ability of families to finance education costs.

Another interesting finding is that as tuition increased over the period in question, the limit on Stafford Federal Loans, which made up 92.2 percent

of public schools' tuition-fee revenue in 1995, were raised. This allowed students to borrow more money for medical school expenses. In 1985, the limit on borrowing both from subsidized Stafford Loans and unsubsidized Stafford Loans was a total of \$9,000. By 1995, that limit had been increased to \$18,500 per year. Moreover, beginning in 1987, students entering medical school were asked about their borrowing plans: 47 percent indicated that they intended to borrow to finance their education. In 1995, the same question resulted in 63 percent indicating that they intended to borrow. This leads the authors to conclude that the availability of financing is a major factor in explaining the increase in student indebtedness.

The report concludes that "the growth in debt has been disproportionate with the escalation of tuition fees, pointing to additional factors driving borrowing," including the lifting of borrowing limits under the Higher Education Act.

M.P. Rosenthal, P.A. Marquette and J.J. Diamond, "Trends along the Debt-Income Axis: Implications for Medical Students' Selections of Family Practice Careers," *Academic Medicine* 71(6), June 1996

This study, conducted by the Jefferson Medical College of Thomas Jefferson University, examines whether medical students' debt levels influenced the selection of family practice careers independent of other factors. The authors survey 1,350 graduates of Jefferson Medical College from the graduating classes of 1987 through 1993 and conduct a focused analysis of 326 individuals from the classes of 1992 and 1993. They conclude that "high levels of debt (over \$75,000) had a significant negative effect on family practice specialty choice among recent Jefferson graduates."

W.L. Colquitt, M.C. Zeh, C.D. Killian and J.M. Cultice, "Effect of Debt on U.S. Medical School Graduates' Preferences for Family Medicine, General Internal Medicine and General Pediatrics," *Academic Medicine* 71(4), April 1996

This study focuses on 1991 and 1992 graduates of U.S. medical schools, using data from well-established surveys and administrative data from the Health Education Assistance Loan program in an

effort to determine "how debt influences specialty choice and especially how debt combines with other important correlates of specialty choice to influence primary care specialty preferences."

The study begins by noting that the evidence of debt affecting specialty choice is conflicting:

"When medical students retrospectively rate the importance of debt in their specialty decisions, they frequently do not rank debt high relative to other influences... ..when residents are asked to consider the role of debt...they often do report that loan repayment and financial considerations were important in their specialty plans."

After reviewing data from the 1991 and 1992 graduates, the authors conclude that "the role of debt is complex and tied to a number of career planning decisions and supporting influences." Moreover, while it appears that debt is an important factor in the decision-making process regarding specialty choice, "its significance varies by level of expected income, gender, type of loan and region of anticipated practice."

D.G. Kassebaum and P.L. Szenas, "Relationship between Indebtedness and the Specialty Choices of Graduating Medical Students," *Academic Medicine* 67: 700-7, 1992

This study investigates whether debt levels of graduating medical students affect specialty choice. Using data from the 1992 AAMC *Graduate Questionnaire (GQ)*, the authors determine that 6.2 percent of the survey respondents indicated that debt levels were a strong or major influence on specialty choice. However, among respondents with over \$75,000 of debt, 20 percent felt that debt had a strong influence on their specialty choice. The length of residency training affected only nine percent of respondents, who in some cases felt rushed to begin working and paying off their loans because of debt. The report concludes that "studies over the past decade have shown variable, and generally weak, relationships between the indebtedness of students and their choices of specialty training and practices."

L.C. Baker and D.C. Barker, “Factors Associated with the Perception That Debt Influences Physicians’ Specialty Choices,” *Academic Medicine* 72, 1997

Based on a 1991 national sample of about 5,200 physicians under the age of 45 with two to ten years of practice experience, this study is aimed at determining the impact of educational debt on perceptions of specialty choice. The results are that “only 3.2 percent of the physicians indicated that debt had had a major influence on their specialty choice.” The study also finds that among the group surveyed (and after controlling for debt levels), physicians “with children during medical school and those whose parents had less education and lower incomes were more likely to say that debt had been an influence.” Baker and Barker conclude that:

“Debt appears to have had at most a minor influence on the choices made by the majority of physicians. However, the existence of a small number of physicians who were influenced implies that debt does remain important for a limited population.”

With respect to characteristics of those individuals who indicated that debt had had an impact, the authors note that “the fact [that] we found a number of characteristics other than debt to be associated with the probability of feeling influenced by debt is evidence of considerable heterogeneity in the relationship of debt to specialty choice.”

IV. References from New Zealand

A. Zarkovic, S. Child and G. Naden, “Career Choice of New Zealand Junior Doctors,” *New Zealand Medical Journal* 119(1229), February 2006

The findings from this study are drawn from a survey of final-year medical students and post-graduates in years one through four. The response rate was 64 percent (256/400). No direct link to student debt was observed. Findings of interest include the fact that respondents’ career choice was based primarily on specialty interest. The authors also note—based on previous research—that career aspirations and choices “are extremely flexible, with approximately one-quarter to one-half of those students ending up in different careers.”

J. Moore, D. Gale, K. Dew and G. Davie, “Student Debt amongst Junior Doctors in New Zealand Part 1: Quantity, Distribution and Psychosocial Impact,” *New Zealand Medical Journal* 119(1229), February 2006

This study is based on survey data from first-year medical graduates practicing in New Zealand. The response rate was 53 percent (158/296); 92 percent of the respondents had some form of non-mortgage education debt, and 85 percent had a government loan. The study determines a “baseline” of data for first-year doctors and notes, on average, high levels of debt (approximately NZ\$60,000), with 13 percent of respondents indicating a total non-mortgage debt greater than NZ\$100,000. In addition, “almost one-third of the respondents stated that they felt stressed about their loan either ‘often’ or ‘always,’ and 50 percent were stressed ‘sometimes.’” Reference is also made to the impact of debt on decisions regarding having children or having fewer children. The authors note, however, that “recent initiatives are likely to have a positive impact on the current situation.”

J. Moore, D. Gale, K. Dew and D. Simmers, “Student Debt amongst Junior Doctors in New Zealand Part 2: Effects on Intentions and Workforce,” *New Zealand Medical Journal* 119(1229), February 2006

This article is based on the survey noted above and focuses on career location and specialty choices. With respect to specialty choice, the authors find that:

“Respondents owing more found debt and financial considerations had a larger influence over their choice of specialty. However, level of debt was not a strong influence for most respondents...The strongest influences over specialty choice were interest, lifestyle, family and intellectual challenge, respectively.”

With respect to career location, 80 percent of respondents indicated their intention to spend most of their career in New Zealand, and “doctors with higher debt were more likely to consider these factors [level of debt and financial opportunities] as important in deciding whether to leave New Zealand.”

J. Fitzjohn, T. Wilkinson, D. Gill and R. Mulder, “The Demographic Characteristics of New Zealand Medical Students: The New Zealand *Well-Being, Intentions, Debt and Experiences (WIDE) Survey of Medical Students 2001 Study*,” *New Zealand Medical Journal* 116(1183), October 2003

Earlier research in New Zealand was largely based on the *Well-Being, Intentions, Debt and Experience (WIDE) Survey* of medical students conducted in 2001. Key findings from the *WIDE Survey* are:

- The ethnic composition of the class—Maori (6.8 percent), Pacific Islander (4.3 percent), NZ European (50.9 percent) and Asian (31.4 percent)—differed significantly from the general New Zealand population. Maori and Pacific Island students and students from a rural background were significantly under-represented. Permanent residents represented 11.1 percent of the student population. Three-quarters of medical students reported that at least one of their parents had a tertiary qualification.
- Medical students are more likely to be socio-economically advantaged and from an urban community and less likely to be of Maori or Pacific Island descent, in comparison to the general population.
- Earlier studies of the profile of New Zealand medical students suggest little change in the profile since the introduction of higher medical tuition and loan programs.

V. Additional Information

The following references and commentary are taken verbatim from *Accessibility and Career Choice Review: A Review of Related Literature* by David Stager. Stager’s work was an appendix to a report at the University of Toronto entitled *Provost’s Study of Accessibility and Career Choice in the Faculty of Law* (February 2003).

Philip A. Woodworth, Frederic C. Chang, Stephen D. Helmer, “Debt and Other Influences on Career Choices among Surgical and Primary Care Residents in a Community-Based Hospital System,” *American Journal of Surgery* 180(6): 570–76, 2000

“The purpose of the study was specifically to evaluate debt and other factors that influence medical graduates’ choice between a career in a surgical specialty or in primary care. Residents in surgical specialties and primary care were surveyed regarding demographics, factors influencing choice of specialty, methods of financing education, debt characteristics and outlooks regarding future earnings and practice characteristics. The length of residency, desirable lifestyle and working hours were all more important to primary care residents. Surgeons found intellectual challenge and procedure-based practice of greater importance. Although not highly regarded by either group, scholarship obligation and student loans had a significantly greater impact on specialty choice and practice plans for primary care residents.”

Erica Frank and Shamiram Feinglass, “Student Loan Debt Does Not Predict Female Physicians’ Choice of Primary Care Specialty,” *Journal of General Internal Medicine*, 14(6): 347–50, 1999

“The direct focus of this study was on the relation between ultimately choosing to be a primary care physician and one’s amount of student loan debt at medical school graduation. Data were drawn from the *Women Physicians Health Study*, a large, nationally representative, questionnaire-based study of 4,501 U.S. women physicians. While the youngest physicians were more than five times as likely as the oldest to have had some student loan debt and were also more likely to choose a primary care specialty, there nonetheless was no relation between being a primary care physician and amount of indebtedness; this was true even when the results were adjusted for the physician’s

decade of graduation and ethnicity. The authors concluded therefore that ‘although there may be other reasons for reducing student loan debt, at least among U.S. women physicians, encouraging primary care as a specialty choice may not be a reason for doing so.’”

There are four or five other articles in the medical journals relating to these topics, but since the results are substantially similar it was decided not to extend the review in this related area.

Appendix B: Historical Tuition and Enrolment Data

Total Medical Enrolment by University

University	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Memorial University of Newfoundland	56	56	60	62	63	63	61	60	61	61	62	61	60
Dalhousie University	84	83	86	92	86	91	86	89	86	84	94	93	92
Université Laval	143	144	132	113	114	114	132	140	155	172	185	197	211
McGill University	139	134	120	110	107	111	121	129	135	147	160	174	176
University of Montreal*	180	167	164	163	143	138	157	164	181	195	212	222	262
University of Sherbrooke	104	101	92	89	93	90	104	112	125	137	150	157	168
McMaster University	100	101	102	100	102	100	100	113	130	140	139	138	150
University of Ottawa	85	84	84	84	84	86	90	102	121	135	136	136	152
Queen's University at Kingston	75	75	75	75	75	77	76	80	90	100	100	102	101
University of Toronto	178	181	175	177	178	178	178	193	199	199	200	200	205
University of Western Ontario	96	98	98	101	99	96	97	104	118	134	132	133	133
Northern Ontario School of Medicine													56
University of Manitoba	75	72	73	74	75	71	75	75	88	90	89	87	94
University of Saskatchewan	62	56	57	57	56	57	51	55	60	61	60	60	62
University of Alberta	115	106	104	105	110	107	105	126	128	131	133	128	129
University of Calgary	70	72	71	76	72	81	80	101	116	113	116	105	104
University of British Columbia	121	121	120	120	120	121	121	120	128	129	128	200	225
Total	1683	1651	1613	1598	1577	1581	1634	1763	1921	2028	2096	2193	2380

Source: Association of Faculties of Medicine of Canada, *Canadian Medical Education Statistics*, various years.

Total First-Year Medical Enrolment by University

University	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Planned
Memorial University of Newfoundland	56	56	60	62	63	63	61	60	61	61	62	61	60	60
Dalhousie University	84	83	86	92	86	91	86	89	86	84	94	93	92	90
Université Laval	143	144	132	113	114	114	132	140	155	172	185	197	211	203
McGill University	139	134	120	110	107	111	121	129	135	147	160	174	176	195
University of Montreal*	180	167	164	163	143	138	157	164	181	195	212	222	262	265
University of Sherbrooke	104	101	92	89	93	90	104	112	125	137	150	157	168	172
Subtotal Quebec	566	546	508	475	457	453	514	545	596	651	707	750	817	835
McMaster University	100	101	102	100	102	100	100	113	130	140	139	138	150	148
University of Ottawa	85	84	84	84	84	86	90	102	121	135	136	136	152	139
Queen's University at Kingston	75	75	75	75	75	77	76	80	90	100	100	102	101	100
University of Toronto	178	181	175	177	178	178	178	193	199	199	200	200	205	218
University of Western Ontario	96	98	98	101	99	96	97	104	118	134	132	133	133	139
Northern Ontario School of Medicine													56	56
Subtotal Ontario	534	539	534	537	538	537	541	592	658	708	707	709	797	800
University of Manitoba	75	72	73	74	75	71	75	75	88	90	89	87	94	100
University of Saskatchewan	62	56	57	57	56	57	51	55	60	61	60	60	62	60
University of Alberta	115	106	104	105	110	107	105	126	128	131	133	128	129	125
University of Calgary	70	72	71	76	72	81	80	101	116	113	116	105	104	125
Subtotal Alberta	185	178	175	181	182	188	185	227	244	244	249	233	233	250
University of British Columbia	121	121	120	120	120	121	121	120	128	129	128	200	225	224
Total	1683	1651	1613	1598	1577	1581	1634	1763	1921	2028	2096	2193	2380	2419

Source: Association of Faculties of Medicine of Canada, *Canadian Medical Education Statistics*, various years.

First-Year Tuition for Domestic Medical Students by University

Institution	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	% Change
Memorial University of Newfoundland	\$2,000	\$2,150	\$2,312	\$6,250	\$6,250	\$12,500	\$12,500	\$6,250	\$6,250	\$6,250	\$6,250	\$6,250	\$6,250	\$6,250	313%
Dalhousie University	\$3,465	\$4,145	\$4,725	\$5,515	\$5,935	\$6,350	\$6,670	\$7,670	\$8,150	\$8,800	\$10,460	\$11,718	\$12,806	\$13,818	399%
Université Laval	\$1,530	\$1,668	\$1,845	\$1,668	\$1,668	\$1,668	\$1,668	\$1,668	\$1,668	\$1,668	\$2,502	\$2,780	\$2,780	\$2,780	182%
McGill University	\$1,686	\$1,845	\$1,845	\$1,845	\$2,169	\$1,780	\$1,780	\$1,780	\$1,780	\$1,780	\$3,559	\$3,559	\$3,559	\$3,565	211%
University of Montreal	\$1,660	\$2,203	\$2,204	\$2,576	\$2,576	\$2,336	\$2,336	\$2,336	\$2,336	\$2,336	\$2,224	\$2,224	\$2,224	\$2,669	161%
University of Sherbrooke	\$1,545	\$1,668	\$1,668	\$1,668	\$1,668	\$1,668	\$1,668	\$1,668	\$1,668	\$1,668	\$2,729	\$2,729	\$2,729	\$2,759	179%
McMaster University	\$2,576	\$2,835	\$3,117	\$3,734	\$4,480	\$10,500	\$12,600	\$13,500	\$13,500	\$13,500	\$14,445	\$14,445	\$14,445	\$15,600	606%
University of Ottawa	\$2,576	\$2,834	\$2,834	\$3,800	\$4,370	\$5,245	\$7,500	\$8,500	\$10,500	\$12,500	\$14,000	\$14,000	\$14,000	\$14,630	568%
Queen's University at Kingston	\$2,576	\$2,834	\$3,118	\$3,733	\$4,106	\$6,159	\$9,200	\$9,384	\$11,500	\$12,500	\$13,500	\$13,500	\$13,500	\$15,056	584%
University of Toronto	\$2,543	\$2,834	\$3,118	\$4,037	\$4,844	\$7,800	\$11,000	\$14,000	\$14,700	\$15,435	\$16,207	\$16,207	\$16,207	\$16,531	650%
University of Western Ontario	\$2,576	\$2,834	\$3,118	\$4,037	\$4,844	\$5,800	\$10,000	\$10,000	\$14,000	\$14,280	\$14,566	\$14,566	\$14,566	\$15,149	588%
University of Manitoba	\$3,775	\$3,964	\$4,162	\$4,786	\$5,504	\$6,804	\$7,595	\$6,836	\$6,836	\$6,836	\$6,836	\$6,836	\$6,836	\$7,595	201%
University of Saskatchewan	\$3,990	\$4,253	\$4,463	\$4,673	\$5,120	\$5,704	\$5,815	\$6,629	\$7,623	\$9,112	\$9,774	\$11,036	\$11,036	\$11,036	277%
University of Alberta	\$2,865	\$3,205	\$3,557	\$3,923	\$4,299	\$4,682	\$4,995	\$5,408	\$5,475	\$5,674	\$8,066	\$10,388	\$10,388	\$10,388	363%
University of Calgary	\$2,403	\$4,054	\$4,512	\$4,918	\$5,392	\$5,836	\$6,192	\$6,504	\$6,744	\$6,992	\$9,932	\$12,788	\$12,788	\$12,788	532%
University of British Columbia	\$3,501	\$3,767	\$3,937	\$3,937	\$4,000	\$3,937	\$3,937	\$3,937	\$3,740	\$6,545	\$10,272	\$14,000	\$14,000	\$14,280	408%
High	\$3,990													\$16,531	414%
Low	\$1,530													\$2,669	174%
Simple Average	\$2,579	\$2,943	\$3,158	\$3,819	\$4,202	\$5,548	\$6,591	\$6,629	\$7,279	\$7,867	\$9,083	\$9,814	\$9,882	\$10,306	400%

Source: Association of Faculties of Medicine of Canada, *Canadian Medical Education Statistics*, various years.

Indexed First-Year Tuition for Domestic Medical Students 1993–2006

Institution	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Memorial University of Newfoundland	100.0	107.5	115.6	312.5	312.5	625.0	625.0	312.5	312.5	312.5	312.5	312.5	312.5	312.5
Dalhousie University	100.0	119.6	136.4	159.2	171.3	183.3	192.5	221.4	235.2	254.0	301.9	338.2	369.6	398.8
Université Laval	100.0	109.0	120.6	109.0	109.0	109.0	109.0	109.0	109.0	109.0	163.5	181.7	181.7	181.7
McGill University	100.0	109.4	109.4	109.4	128.6	105.6	105.6	105.6	105.6	105.6	211.1	211.1	211.1	211.4
University of Montreal	100.0	132.7	132.8	155.2	155.2	140.7	140.7	140.7	140.7	140.7	134.0	134.0	134.0	160.8
University of Sherbrooke	100.0	108.0	108.0	108.0	108.0	108.0	108.0	108.0	108.0	108.0	176.6	176.6	176.6	178.6
McMaster University	100.0	110.1	121.0	145.0	173.9	407.6	489.1	524.1	524.1	524.1	560.8	560.8	560.8	605.6
University of Ottawa	100.0	110.0	110.0	147.5	169.6	203.6	291.1	330.0	407.6	485.2	543.5	543.5	543.5	567.9
Queen's University at Kingston	100.0	110.0	121.0	144.9	159.4	239.1	357.1	364.3	446.4	485.2	524.1	524.1	524.1	584.5
University of Toronto	100.0	111.4	122.6	158.7	190.5	306.7	432.6	550.5	578.1	607.0	637.3	637.3	637.3	650.1
University of Western Ontario	100.0	110.0	121.0	156.7	188.0	225.2	388.2	388.2	543.5	554.3	565.5	565.5	565.5	588.1
University of Manitoba	100.0	105.0	110.3	126.8	145.8	180.2	201.2	181.1	181.1	181.1	181.1	181.1	181.1	201.2
University of Saskatchewan	100.0	106.6	111.9	117.1	128.3	143.0	145.7	166.1	191.1	228.4	245.0	276.6	276.6	276.6
University of Alberta	100.0	111.9	124.2	136.9	150.1	163.4	174.3	188.8	191.1	198.0	281.5	362.6	362.6	362.6
University of Calgary	100.0	168.7	187.8	204.7	224.4	242.9	257.7	270.7	280.6	291.0	413.3	532.2	532.2	532.2
University of British Columbia	100.0	107.6	112.5	112.5	114.3	112.5	112.5	112.5	106.8	186.9	293.4	399.9	399.9	407.9
Simple Average	100.0	114.1	122.5	148.1	162.9	215.1	255.5	257.0	282.2	305.0	352.2	380.5	383.1	399.6

Source: Association of Faculties of Medicine of Canada, *Canadian Medical Education Statistics*, various years.

Appendix C: Statistical Methodology and Key Findings

Introduction

This appendix is intended to provide a brief description of the statistical tests that were utilized to analyze the survey data referred to in the main report. The basic challenge was to determine: 1) the best statistical tools to determine differences in the survey responses by tuition category, and 2) determine the significance of these differences in order to discuss them appropriately in the commentary. Additional analysis was conducted to determine the impact of debt on choice of specialty, location and career for all survey respondents.

Statistical Tools

The key statistical tools employed were as follows:

- A. Chi-square—used to test hypotheses on the relationship between two variables, whether they are nominal or ordinal. Chi-square tests were supplemented by Cramer V tests when at least one variable was nominal and by Gamma and tau-c tests when variables were ordinal.
- B. T-Test—used to test the statistical difference between two means or proportions.
- C. ANOVA—used to test hypotheses related to differences between means (or proportions) when there are more than two groups.

1.1 Statistical Results for Key Questions

1. Determining whether there are differences in the **socio-economic profile** of students according to the three tuition categories—low, medium and high

Using the responses to Q28a (father's education) and Q37 (parental income), chi-square, Gamma and tau-c tests were performed.

Table 1: Father's Education by Tuition Group

	Tuition Group			Total
	Low	Mid	High	
None	5.8	9.2	7.0	7.0
High school graduate or equivalent	11.6	11.5	10.6	10.9
Non-university certificate or diploma or university certificate or diploma below Bachelor's level	25.3	22.9	16.6	19.1
Bachelor's degree(s) or university certificate or diploma above Bachelor's level	27.4	24.4	31.4	29.8
Master's degree or higher	29.9	32.1	34.4	33.2
Total	100	100	100	100

Entries are percentages. ($X^2 = 13.66$; $df = 8$; $p = .091$; $G = .08$; $T_c = .05$)

Table 2: Parental Income by Tuition Group

	Tuition Group			Total
	Low	Mid	High	
Less than \$40,000	11.3	16.7	16.0	15.1
\$40,000–\$79,999	34.4	33.3	27.7	29.6
\$80,000–\$119,999	30.8	19.3	25.9	26.2
\$120,000 or more	23.5	30.7	30.5	29.1
Total	100	100	100	100

Entries are percentages. ($X^2 = 12.66$; $df = 6$; $p = .049$; $G = .04$; $T_c = .02$)

There are no clear differences in socio-economic profile by tuition level. The chi-square test indicates no relationship between tuition and father's education ($X^2 = 13.66$; $df = 8$; $p = .091$). The result for parental income is near the .05 conventional statistical threshold, but the supplemental Gamma and tau-c tests indicate a pretty weak relationship between the two variables ($G = .04$; $T_c = .02$).

- Determining whether there are differences in **choice of specialty** according to the three tuition categories—low, medium and high

Using the responses to Q10—grouped according to four categories (family medicine and pediatrics; medical specialties; surgical specialties; pathology, radiology and laboratory)—chi-square and Cramer V tests were performed.

Table 3: Choice of Specialty by Tuition Group

	Tuition Group			Total
	Low	Mid	High	
Family medicine and pediatrics	33.6	39.7	35.4	35.5
Medical specialties	38.2	32.1	37.5	37.0
Surgical specialties	15.8	14.5	16.3	16.0
Pathology, radiology and laboratory	12.4	13.7	10.8	11.5
Total	100	100	100	100

Entries are percentages. ($X^2 = 3.23$; $df = 6$; $p = .780$; $V = .04$)

The chi-square test indicates that there is no relationship between tuition level and choice of specialty ($X^2 = 3.23$; $df = 6$; $p = .780$).

Using the responses to Q11, chi-square, Gamma, tau-c and ANOVA tests were performed.

3. Determining whether there are differences in **choice of location** according to the three tuition categories—low, medium and high

Table 4: Importance of Workload/Work-Life Balance by Tuition Group

	Tuition Group			Total
	Low	Mid	High	
[1] Not at all important	1.3	1.5	0.7	0.9
[2]	4.6	0.8	3.7	3.6
[3]	17.1	9.2	13.2	13.6
[4]	27.5	43.1	33.3	33.2
[5] Very important	49.6	45.4	49.0	48.7
Total	100	100	100	100
Mean	4.2	4.3	4.3	4.3

Entries are percentages. ($X^2 = 15.24$; $df = 8$; $p = .055$; $G = .02$; $T_c = .01$; $F = .71$; $p = .493$)

Table 5: Importance of Cost of Living by Tuition Group

	Tuition Group			Total
	Low	Mid	High	
[1] Not at all important	14.6	5.4	6.8	8.2
[2]	18.8	17.1	14.6	15.7
[3]	36.7	32.6	31.7	32.8
[4]	25.0	32.6	36.4	33.6
[5] Very important	5.0	12.4	10.8	9.6
Total	100	100	100	100
Mean	2.9	3.3	3.3	3.2

Entries are percentages. ($X^2 = 32.94$; $df = 8$; $p = .000$; $G = .20$; $T_c = .11$; $F = 14.99$; $p = .000$)

Table 6: Importance of Depth of Availability of Medical Resources in the Community by Tuition Group

	Tuition Group			Total
	Low	Mid	High	
[1] Not at all important	1.7	0.8	2.6	2.2
[2]	14.2	7.0	10.2	10.7
[3]	33.1	32.8	25.6	27.9
[4]	33.5	45.3	43.1	41.4
[5] Very important	17.6	14.1	18.4	17.8
Total	100	100	100	100
Mean	3.5	3.7	3.6	3.6

Entries are percentages. ($X^2 = 17.45$; $df = 8$; $p = .026$; $G = .09$; $T_c = .05$; $F = 1.83$; $p = .161$)

Table 7: Importance of Desire to Contribute to Given Community by Tuition Group

	Tuition Group			Total
	Low	Mid	High	
[1] Not at all important	2.5	5.4	6.6	5.6
[2]	14.3	7.8	10.8	11.2
[3]	19.8	21.7	23.8	22.8
[4]	36.7	42.6	39.5	39.3
[5] Very important	26.6	22.5	19.3	21.1
Total	100	100	100	100
Mean	3.7	3.7	3.5	3.6

Entries are percentages. ($\chi^2 = 15.67$; $df = 8$; $p = .047$; $G = .10$; $T_c = .05$; $F = 2.58$; $p = .076$)

Table 8: Importance of Desire to Practice in Location with Depth of Resources in Related Medical Specialties by Tuition Group

	Tuition Group			Total
	Low	Mid	High	
[1] Not at all important	8.4	1.6	4.7	5.1
[2]	20.2	9.4	10.7	12.5
[3]	27.7	30.5	25.4	26.5
[4]	29.8	43.0	38.4	37.2
[5] Very important	13.9	15.6	20.7	18.7
Total	100	100	100	100
Mean	3.2	3.6	3.6	3.5

Entries are percentages. ($\chi^2 = 33.98$; $df = 8$; $p = .000$; $G = .18$; $T_c = .10$; $F = 12.61$; $p = .000$)

Table 9: Importance of Earnings Potential/Net Income by Tuition Group

	Tuition Group			Total
	Low	Mid	High	
[1] Not at all important	7.5	1.5	4.3	4.6
[2]	18.8	16.9	13.5	15.0
[3]	41.7	31.5	27.6	30.9
[4]	25.0	37.7	38.5	35.6
[5] Very important	7.1	12.3	16.1	13.8
Total	100	100	100	100
Mean	3.1	3.4	3.5	3.4

Entries are percentages. ($\chi^2 = 43.55$; $df = 8$; $p = .000$; $G = .24$; $T_c = .13$; $F = 16.36$; $p = .000$)

Table 10: Importance of Employment of Spouse/Significant Other by Tuition Group

	Tuition Group			Total
	Low	Mid	High	
[1] Not at all important	3.9	6.8	6.2	5.7
[2]	4.8	7.8	4.0	4.6
[3]	14.0	10.7	13.7	13.4
[4]	34.2	35.9	29.7	31.4
[5] Very important	43.0	38.8	46.4	44.8
Total	100	100	100	100
Mean	4.1	3.9	4.1	4.1

Entries are percentages. ($X^2 = 8.33$; $df = 8$; $p = .402$; $G = .04$; $T_c = .02$; $F = .74$; $p = .480$)

Table 11: Importance of Home Community by Tuition Group

	Tuition Group			Total
	Low	Mid	High	
[1] Not at all important	17.1	12.6	12.9	13.7
[2]	18.4	16.5	15.9	16.4
[3]	23.5	26.0	21.9	22.7
[4]	22.6	28.3	30.3	28.5
[5] Very important	18.4	16.5	19.1	18.6
Total	100	100	100	100
Mean	3.1	3.2	3.3	3.2

Entries are percentages. ($X^2 = 8.10$; $df = 8$; $p = .424$; $G = .08$; $T_c = .05$; $F = 2.14$; $p = .119$)

Table 12: Importance of Joining Existing Practice by Tuition Group

	Tuition Group			Total
	Low	Mid	High	
[1] Not at all important	15.6	11.1	17.4	16.3
[2]	19.0	24.8	23.7	22.8
[3]	28.7	35.9	31.5	31.4
[4]	26.6	23.1	20.8	22.3
[5] Very important	10.1	5.1	6.6	7.2
Total	100	100	100	100
Mean	3.0	3.9	2.8	2.8

Entries are percentages. ($X^2 = 12.49$; $df = 8$; $p = .131$; $G = .11$; $T_c = -.06$; $F = 3.10$; $p = .046$)

Table 13: Importance of Preference for Lifestyle in Given Community by Tuition Group

	Tuition Group			Total
	Low	Mid	High	
[1] Not at all important	0.8	0.8	0.6	0.7
[2]	2.9	0.8	2.6	2.5
[3]	15.0	14.0	12.4	13.1
[4]	43.8	49.6	37.4	40.1
[5] Very important	37.5	34.9	46.9	43.7
Total	100	100	100	100
Mean	4.1	4.2	4.3	4.2

Entries are percentages. ($\chi^2 = 14.39$; $df = 8$; $p = .072$; $G = .14$; $T_c = .06$; $F = 2.83$; $p = .059$)

Table 14: Importance of Return of Service Program by Tuition Group

	Tuition Group			Total
	Low	Mid	High	
[1] Not at all important	37.4	21.2	29.4	30.0
[2]	27.6	20.4	16.7	19.5
[3]	18.4	31.9	26.1	25.3
[4]	12.6	18.6	20.0	18.3
[5] Very important	4.0	8.0	7.7	7.0
Total	100	100	100	100
Mean	2.2	2.7	2.6	2.5

Entries are percentages. ($\chi^2 = 26.18$; $df = 8$; $p = .001$; $G = .14$; $T_c = .08$; $F = 8.53$; $p = .000$)

Tests conducted on 11 factors influencing choice of location identified in the survey give various results. Chi-square and ANOVA tests performed on factors related to “concern over workloads/work-life balance,” “employment of spouse/significant other,” “home community” and “preference for lifestyle in a given community” (Tables 4, 10, 11 and 13) show no relationship with (or no differences according to) tuition groups.

The two tests lead to mixed conclusions with respect to “depth of availability of medical resources in the community,” “desire to contribute to a given community” and “importance of joining an existing practice” (Tables 6, 7 and 12), suggesting shaky relationships with tuition level.

Clear relationships or differences are found concerning “cost of living,” “desire to practice in a location with depth of resources in related medical specialties,” “earnings potential/net income” and “return of service program” (Tables 5, 8, 9 and 14). The strongest relationship is with “earnings potential/net income” (with a Gamma and a tau-c of .24 and .13 respectively), followed by “cost of living” (.20/.11), “desire to practice in a location with depth of resources in related medical specialties” (.18/.10) and “return of service program” (.14/.08). It should be noted, however, that none of these four items appear in the three top-ranked factors identified by respondents in terms of influencing their choice of career location.

4. Determining whether there are differences in **choice of career** according to the three tuition categories—low, medium and high

Using the responses to Q9, chi-square and Cramer V statistical tests were performed.

Table 15: Choice of Career by Tuition Group

	Tuition Group			Total
	Low	Mid	High	
Government agency	24.5	0.8	1.2	5.9
Int'l humanitarian aid	10.0	9.9	7.3	8.2
University affiliated	38.2	44.3	45.1	43.6
Private practice	20.3	40.5	42.0	37.4
All other	7.1	4.6	4.3	4.9
Total	100	100	100	100

Entries are percentages. ($X^2 = 205.71$; $df = 8$; $p = .000$; $V = .30$)

Table 16: Choice of Career by Tuition Group, Excluding Quebec

	Tuition Group		Total
	Mid	High	
Government agency	0.8	1.2	1.2
Int'l humanitarian aid	9.9	7.3	7.7
University affiliated	44.3	45.1	45.0
Private practice	40.5	42.0	41.8
All other	4.6	4.3	4.4
Total	100	100	100

Entries are percentages. ($X^2 = 1.30$; $df = 4$; $p = .861$; $V = .04$)

The chi-square test indicates a statistically significant relationship between tuition level and choice of career ($X^2 = 205.71$; $df = 8$; $p = .000$). As mentioned in the report, this relationship may come from a translation problem in the French questionnaire. An analysis excluding Quebec (Table 16) seems to support this hypothesis, since the relation vanishes and chi-square now indicates that no relation exists between tuition groups (mid or high) and choice of career ($X^2 = 1.30$; $df = 4$; $p = .861$).

5. To better understand the potential impact of **debt as a factor influencing choice** in 2, 3 and 4 above, an analysis was conducted using all respondents. Essentially, the question was to determine whether there were differences in responses regarding choice of specialty, choice of location and choice of career by debt level.

Using the responses to Q19 and Q20 (excluding mortgage debt), T-test, chi-square, Cramer V, Gamma and tau-c tests were performed.

Table 17: Choice of Specialty by Current Debt

	Current Debt		Total
	1st half	2nd half	
Family medicine and pediatrics	36.9	34.1	35.5
Medical specialties	37.6	36.5	37.0
Surgical specialties	15.3	16.6	16.0
Pathology, radiology and laboratory	10.2	12.7	11.5
Total	100	100	100

Entries are percentages. ($X^2 = 2.70$; $df = 3$; $p = .440$; $V = .05$)

Table 18: Choice of Specialty by Anticipated Debt

	Anticipated Debt		Total
	1st half	2nd half	
Family medicine and pediatrics	38.5	32.8	35.5
Medical specialties	36.3	37.7	37.0
Surgical specialties	13.7	18.1	16.0
Pathology, radiology and laboratory	11.5	11.4	11.5
Total	100	100	100

Entries are percentages. ($X^2 = 6.47$; $df = 3$; $p = .091$; $V = .07$)

Chi-square tests show no relationship between debt (whether current or anticipated) and choice of specialty.

Table 19: Importance of Earnings Potential/Net Income by Anticipated Debt

	Anticipated Debt		Total
	1st half	2nd half	
[1] Not at all important	6.1	3.3	4.6
[2]	15.9	14.1	15.0
[3]	35.0	27.2	30.9
[4]	32.7	38.4	35.6
[5] Very important	10.4	17.0	13.8
Total	100	100	100
Mean	3.3	3.5	3.4

Entries are percentages. ($X^2 = 23.37$; $df = 4$; $p = .000$; $G = .19$; $T_c = .14$; $t = -4.36$; $p = .000$)

The relationship between tuition and importance of earnings potential/net income (Table 9) can be transposed to this analysis on the impact of debt. As for anticipated debt, the chi-square test indicates a statistically significant (positive) relationship between anticipated debt and importance given to earnings potential/net income when choosing career location. The conclusion is also supported by a significant T-test confirming a difference between importance given by the low-debt group (first-half) and the high-debt group (second half).

The relationship of career choice to debt level is very similar to the relationship concerning tuition and debt level. Once Quebec respondents are excluded from the analysis, the relation between anticipated debt and choice of career, which is significant in Table 20 ($X^2 = 54.18$; $df = 4$; $p = .000$), completely disappears in Table 21 ($X^2 = 4.66$; $df = 4$; $p = .324$).

Table 20: Choice of Career by Anticipated Debt

	Anticipated Debt		Total
	<i>1st half</i>	<i>2nd half</i>	
Government agency	10.8	1.5	5.9
Int'l humanitarian aid	9.2	7.2	8.2
University affiliated	41.5	45.5	43.6
Private practice	32.6	41.8	37.4
All other	5.9	4.1	4.9
Total	100	100	100

Entries are percentages. ($X^2 = 54.18$; $df = 4$; $p = .000$; $V = .22$)

Table 21: Choice of Career by Anticipated Debt, Excluding Quebec

	Anticipated Debt		Total
	<i>1st half</i>	<i>2nd half</i>	
Government agency	1.7	0.6	1.2
Int'l humanitarian aid	8.8	6.6	7.7
University affiliated	44.6	45.3	45.0
Private practice	40.1	43.4	41.8
All other	4.7	4.0	4.4
Total	100	100	100

Entries are percentages. ($X^2 = 4.66$; $df = 4$; $p = .324$; $V = .07$)

1.5 Weighting Issue

Given concerns about the distribution of the survey respondents relative to actual enrolments, a weighting factor was introduced, and all analyses were conducted a second time using the weighted data. The weight (column E) is equal to the survey population by university as a percentage (column B) divided by the proportion of respondents by university as a percentage (column D). The values obtained indicate by how much we should multiply column D to make it more representative of actual enrolment. Column F is the adjusted respondent number (N2). Column G is the percentage distribution of N2. The final column is the difference between “G” and “B” and is intended solely to indicate the closeness of fit.

	(A) Enrolment Actual	(B) % Dist	(C) N1	(D) % Dist	(E) Weight	(F) N2	(G) % Dist	(H)
Dalhousie University	359	7.46	85	7.22	1.03	88	7.48	0.03
McGill University	617	12.81	46	3.91	3.28	151	12.84	0.03
McMaster University	422	8.76	54	4.59	1.91	103	8.76	-0.01
Memorial University of Newfoundland	242	5.03	43	3.65	1.38	59	5.02	-0.01
Queen's University	392	8.14	110	9.35	0.87	96	8.16	0.02
Université Laval	802	16.66	195	16.57	1.01	197	16.75	0.10
University of Calgary	323	6.71	163	13.85	0.48	78	6.63	-0.08
University of Manitoba	351	7.29	88	7.48	0.98	86	7.31	0.02
University of Ottawa	541	11.24	172	14.61	0.77	132	11.22	-0.01
University of Saskatchewan	237	4.92	45	3.82	1.29	58	4.93	0.01
University of Western Ontario	529	10.99	176	14.95	0.73	128	10.88	-0.10
Total	4,815		1,177			1,176		0.00

The results of the weighted analyses are very similar to those obtained with unweighted data.

Appendix D:

Survey Questionnaire

Canada Millennium Scholarship Foundation Medicine Questionnaire – Students

Undergraduate Medical Students Enrolled in 2004/05

Medical Education

The following questions relate to your medical education.

1. **Please select the name of the medical school that you currently attend.**
 - Dalhousie University
 - McGill University
 - McMaster University
 - Memorial University of Newfoundland
 - Queen's University at Kingston
 - Université Laval
 - Université de Montréal
 - Université de Sherbrooke
 - University of Alberta
 - University of British Columbia
 - University of Calgary
 - University of Manitoba
 - University of Ottawa
 - University of Saskatchewan
 - University of Toronto
 - University of Western Ontario
2. **In what year of medical school are you currently enrolled?**
 - First year
 - Second year
 - Third year
 - Fourth year
 - Fifth year
3. **Which of the following best describes your enrolment status?**
 - Within province student
 - Out of province student
 - International student
4. **What year did you enter the MD program?**
 - 1995
 - 1996
 - 1997
 - 1998
 - 1999
 - 2000
 - 2001
 - 2002
 - 2003
 - 2004
5. **When are you scheduled to graduate with your MD degree?**
 - 2004
 - 2005
 - 2006
 - 2007
 - 2008
 - 2009
 - 2010

6. To how many Canadian medical schools did you apply?

7. To how many Canadian medical schools were you accepted?

8. On a scale of 1 to 5, where 1 is not at all important and 5 very important, please rate the importance of the following factors on your choice of *medical school*.

1 2 3 4 5 Don't Know Not applicable	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Academic reputation of school
	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Availability of financial assistance
	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Cost of living
	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Employment for spouse / significant other
	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Friends, siblings, other relatives attend(ed)
	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Housing costs
	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Location of medical school
	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Own academic standing
	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Parental influence
	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Potential to live at home
	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Tuition costs
	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Other mandatory costs (e.g. membership in medical associations)
	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Other, please specify

Medical Career

The following questions are related to your future career.

9. If you had to choose your medical *career* today, which of the following would you choose? Please select *one* response only.

- Armed Forces
- Governmental agency (e.g. Medical health officer, Health Canada, etc.)
- International / Humanitarian Aid Agency
- University affiliated (e.g. Basic science or community health teaching and research, Research and patient care)
- Other (please specify): _____

Financing Your Medical Education

12. What were the sources of funding for your *under-graduate* MD degree? Please check *all* that apply.

- Personal savings
- Gift from family or friend
- Government grants
- Support from a spouse or significant other
- University sponsored bursaries
- University sponsored scholarships
- Other university awards
- Other scholarships
- Other bursaries
- Income from employment associated with your medical program
- Other personal employment income
- Return of service agreement
- Government student loans
- Personal loan from bank (includes Personal line of credit)
- Loan from family or friend
- Credit Card(s)
- Other, please specify

13. What were the *top two* sources of funding for your *under-graduate* MD degree? Please select *two* only.

Will show only items selected in Q12

- Personal savings
- Gift from family or friend
- Government grants
- Support from a spouse or significant other
- University sponsored bursaries
- University sponsored scholarships
- Other university awards
- Other scholarships
- Other bursaries
- Income from employment associated with your medical program
- Other personal employment income
- Return of service agreement
- Government student loans
- Personal loan from bank (includes Personal line of credit)
- Loan from family or friend
- Credit Card(s)
- Other, please specify

14. Do you receive day-to-day financial support from a spouse or significant other?

- Yes, to a great extent
- Yes, to some extent
- No

15. Do you have a part-time job at any time in the academic year (while attending medical school)?

- Yes
- No

16. Did you have any debt (e.g., bank loans, student loans, family loans, mortgage, etc.) prior to entering medical school?

- Education-related debt
- Other debt
- No —> Skip to Question 18

17. How much debt did you have *prior to entering your MD program*? (Please enter your best estimate if you are not sure of the exact amount — indicate \$0 if no amount was outstanding).

Government student loans: \$ _____
 Bank/other financial services,
 including line of credit: \$ _____
 Credit card: \$ _____
 Family loans (including
 loans from friends): \$ _____
 Mortgage: \$ _____
 Other financing, please specify
 _____ \$ _____
Total: Totalled by system \$ _____

18. How much debt did you have *as of August 1 of the current academic year (2004)*? (Please enter your best estimate if you are not sure of the exact amount — indicate \$0 if no amount was outstanding).

Government student loans: \$ _____
 Bank/other financial services,
 including line of credit: \$ _____
 Credit card: \$ _____
 Family loans (including
 loans from friends): \$ _____
 Mortgage: \$ _____
 Other financing, please specify
 _____ \$ _____
Total: Totalled by system \$ _____

19. What is the amount of your debt outstanding *at this time*? (Please enter your best estimate if you are not sure of the exact amount – indicate \$0 if no amount is outstanding).

Government student loans: \$ _____
 Bank/other financial services,
 including line of credit: \$ _____
 Credit card: \$ _____
 Family loans (including
 loans from friends): \$ _____
 Mortgage: \$ _____
 Other financing, please specify
 _____ \$ _____
Total: Totalled by system \$ _____

20. What amount of outstanding debt do you anticipate having *at the time of graduation with your MD degree*? (Please enter your best estimate if you are not sure of the exact amount — indicate \$0 if you will have no debt).

Government student loans: \$ _____
 Bank/other financial services,
 including line of credit: \$ _____
 Credit card: \$ _____
 Family loans (including
 loans from friends): \$ _____
 Mortgage: \$ _____
 Other financing, please specify
 _____ \$ _____
Total: Totalled by system \$ _____

21. How much do you anticipate spending on expenses other than tuition (e.g., rent, books, supplies, food clothing, transportation, entertainment, debt servicing, etc.) this academic year?

LIVING EXPENSES – this includes

Shelter costs (such as rent/mortgage, property taxes, home/tenant insurance, utilities, telephone/cell phone, cable/internet),

Transportation (loan/lease payments, insurance, gas, parking, license & registration, maintenance and repairs and other costs, like public transportation, taxis and car pools), **Food** (groceries/home supplies, take out/eating out, lunches), **Clothing**,

Discretionary costs (gifts, home improvement/repair, entertainment, vacations/travel, charities, newspaper/journal, savings and investments, hobbies/recreation, clubs/memberships, laundry/dry cleaning), **Support for family and child** (babysitting / child care, spousal / child support costs etc), and **Other basic expenditures** (allowance, medical/dental/health/life insurance, personal care/toiletries, bank charges) \$ _____

Other direct costs of education (school books / medical supplies) \$ _____

Debt servicing costs (school debt, line of credit, credit cards, etc.): \$ _____

Other, please specify _____: \$ _____

Total: Totalled by system \$ _____

22. How much do you expect your family (spouse, parents, grandparents) to contribute to your expenses this year? (Please indicate \$0 if you receive no contribution.)

Annual contribution: \$ _____

23. How much total financial assistance do you expect to receive in the form of non-repayable gifts or grants this academic year?

Government grants: \$ _____

University or faculty grants or bursaries: \$ _____

Scholarship and awards: \$ _____

Family contributions: \$ _____

Return of Service agreement: \$ _____

Other grants or gifts: \$ _____

The following questions are for classification purposes only. Individual responses will not be identified in any way but consolidated with the responses of others. All information you provide will be treated in the strictest confidence.

24. Prior to entering your MD degree, where was your permanent place of residence?

- Alberta
- British Columbia
- Manitoba
- New Brunswick
- Newfoundland and Labrador
 - Newfoundland
 - Labrador
- Northwest Territories
- Nova Scotia
- Nunavut
- Ontario
- Quebec
- Prince Edward Island
- Saskatchewan
- Yukon
- United States
- Other, please specify _____

25. Was your permanent place of residence in a remote or rural area?

- Yes
 No

26. Do you live with or plan to live with your parents while attending medical school?

- Yes
 No

27. What certificates, diplomas, or degrees have you obtained? Please select all that apply.

- High school graduate or equivalent
 Trades certificate or diploma or Other non-university certificate or diploma (Community college, CEGEP, Technical Institute, etc.)
 University certificate or diploma below bachelor level
 Bachelor's degree(s) (e.g., B.A., B.Sc., LL.B.)
 University certificate or diploma above bachelor level
 Master's degree(s) (e.g., M.A., M.Sc., M.Ed.)
 Earned doctorate (e.g., Ph.D., D.Sc., D.Ed.)
 Other, please specify

28. What certificates, diplomas, or degrees did your parents obtain? Please select all that apply.

Father
 Mother

- None
 High school graduate or equivalent
 Trades certificate or diploma or Other non-university certificate or diploma (Community college, CEGEP, Technical Institute, etc.)
 University certificate or diploma **below** bachelor level
 Bachelor's degree(s) (e.g., B.A., B.Sc., LL.B.)
 University certificate or diploma **above** bachelor level
 Master's degree(s) (e.g., M.A., M.Sc., M.Ed.)
 Degree in Medicine, dentistry, veterinary medicine or Optometry (M.D., D.D.S., D.M.D., D.V.M., O.D.)
 Earned doctorate (e.g., MD/Ph.D., D.Sc., D.Ed.)

29. Please select the category that best applies to your parents' occupations. If your parents are retired or deceased, please provide the main occupation while working.

Father
 Mother

- Homemaker
 Unskilled
 Semi-skilled or skilled
 Self-employed
 Supervisory role or semi-professional
 High-level management or professional
 Physician
 Other, please specify
 Don't know/Not applicable

30. Are you:

- Female
- Male

31. In what year were you born?

19 __

The following two questions dealing with ethnicity are taken from Statistics Canada 2001 Census of Canada.

32. Are you an Aboriginal person, that is, North American Indian, Métis or Inuit (Eskimo)?

- No
- Yes, North American Indian —> Skip to 33
- Yes, Métis —> Skip to 33
- Yes, Inuit (Eskimo) —> Skip to 33

33. To which ethnic or cultural group(s) did your ancestors belong? Please select all that apply.

< check boxes. English and French listed first, others alphabetized >

- French
- English
- Chilean
- Chinese
- Dutch
- East Indian
- Filipino
- German
- Greek
- Irish
- Italian
- Jamaican
- Jewish
- Lebanese
- Polish
- Portuguese
- Scottish
- Somali
- Ukrainian
- Vietnamese
- Other, please specify _____

34. What is your current marital status?

- Single
- Married
- Living together as a couple (common-law)
- Widowed
- Separated/Divorced

35. Do you have dependent children?

- Yes
- No —> skip to Question 37

36. How many dependent children do you have?

37. What is your best estimate of the total current income, before taxes and deductions, of your parental household? If your parents are divorced or separated, please enter the household income of the parent who supported you most. If your parents are no longer alive, please enter your best estimate of their total household income for the last year in which they were alive.

- Less than \$40,000
- \$40,000 – \$79,999
- \$80,000 – \$119,999
- \$120,000 – \$159,999
- \$160,000 – \$199,999
- \$200,000 – \$239,999
- \$240,000 – \$279,999
- \$280,000 – \$319,999
- \$320,000 or more

38. What is your total household income, before taxes and deductions?

- Less than \$40,000
- \$40,000 – \$79,999
- \$80,000 – \$119,999
- \$120,000 – \$159,999
- \$160,000 – \$199,999
- \$200,000 – \$239,999
- \$240,000 – \$279,999
- \$280,000 – \$319,999
- \$320,000 or more

Thank you for participating in this survey. We appreciate your time and cooperation.