

# **The Employment of Saint Mary's University Geography Graduates: A Comparison of Surveys in 1989, 1999, and 2010.**

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## Background

When geography was introduced as a modern university discipline in the mid-1900's, it was a subject of practical and even strategic significance, during a time of empire building, discovery, and mapping. In the twentieth century it became more academic: technical aspects such as surveying and cartography were downplayed or hived off, and the discipline became viewed primarily as intellectual training, in the manner of other liberal arts or social sciences. As such, the prime destination for geography graduates became the teaching profession, and there was little awareness, among students or the public, of other employment opportunities.

This situation still resonated in mid-1989, when the geography department at Saint Mary's University conducted an initial survey of its graduates. By that date, the geography degree program had existed for 14 years, and had graduated approximately 200 students. A mailed-out questionnaire survey of these graduates (Millward 1990a) largely confirmed findings from earlier Canadian surveys (e.g., Robinson 1977, Helleiner and Sparrow 1977, Krueger 1980, Zylak *et al.* 1982): while teaching was the largest single career choice, and other graduates were employed in fields related to geography (notably planning), almost two-thirds of respondents were not in identifiably geographic positions.

A second survey was conducted in September of 1999. At that time, approximately 450 students had graduated from the department's major and honours programs. An identical questionnaire was mailed to all graduates whose address was known. Comparison of the survey results (Millward and McCalla 2001) showed marked shifts in graduate career patterns, and suggested that geography was again becoming primarily a practical or professional subject.

A third survey was conducted in the Spring of 2010, using an online format but employing identical questions. Though focusing primarily on the 2010 results, this paper reports results from all three surveys, assesses differences between them, and attempts to discern longitudinal trends in graduate career patterns. Owing to the non-random and non-stratified nature of the survey recruitment procedures, differences between survey results cannot be tested for statistical significance. However, the results show that several of the trends identified between 1989 and 1999 have continued through to 2010, with important implications for our current programs and students.

## The Questionnaire and the Samples

The questionnaire in all three years followed the same format as that used in May 1989 (see Millward 1990a, 1990b). The questionnaire was designed to provide specific details of graduate employment paths (by write-in answers), while at the same time allowing for tabulation of category data, through the use of multiple-choice answers. Because not all questions were applicable to all graduates, the form used "skip-logic" to lead

respondents to appropriate questions using “go to” requests. The form included space for additional comments. The 2010 survey was created at [www.surveymonkey.com](http://www.surveymonkey.com), but was almost identical to the earlier surveys, and included the same questions, response choices, and skip-logic.

Respondent recruitment in 1989 and 1999 was by a mailed questionnaire and accompanying letter of invitation. Questionnaires were sent to all graduates of the department for whom current addresses were available (approximately 200 at each date). Many of these addresses were provided by the University’s Alumni Office. Response rates were similar in each year (98 completed forms were returned in 1989, and 82 in 1999). The 2010 survey started with a smaller number of graduates for whom we had reliable current e-mail addresses (about 70). These alumni were e-mailed invitations to participate, with a link to the survey site at [surveymonkey.com](http://surveymonkey.com). In addition, we encouraged “cascade” recruitment, by asking respondents to forward the letter of invitation to others, or alternatively to suggest additional e-mail contact addresses. For this reason, a response rate cannot be calculated. The number of respondents, however, was lower than expected, at only 49.

Given the recruitment strategies used, the samples cannot be considered as random samples of Saint Mary’s geography graduates. Respondents are likely to be more recent graduates, who have stayed in touch with department members or with each other.

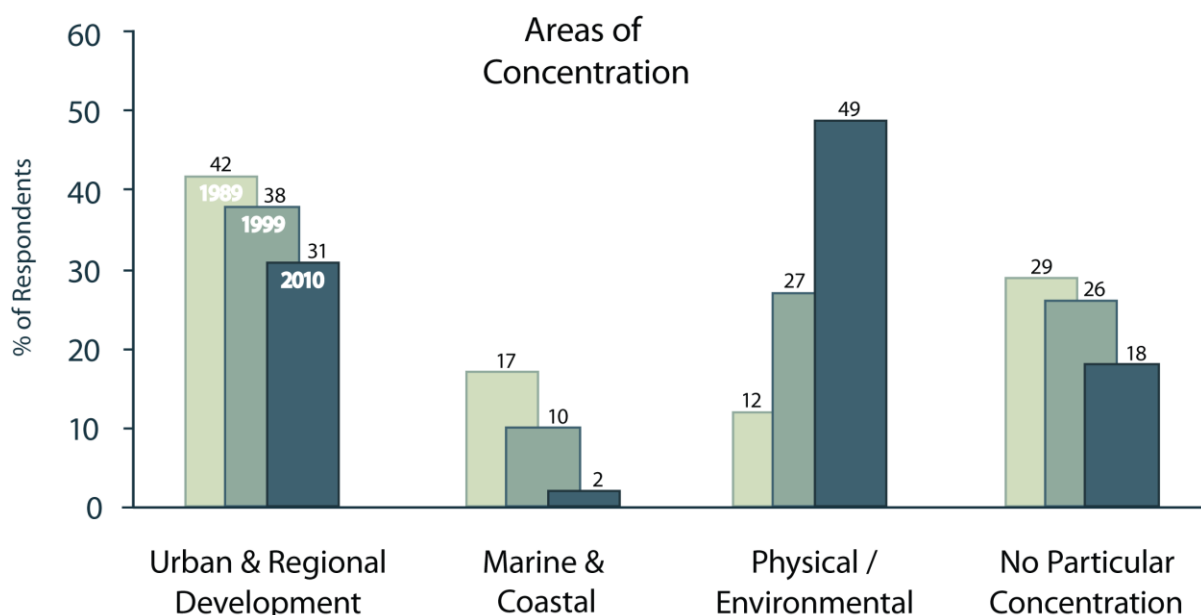


Figure 1. Course concentrations in the Saint Mary’s geography degree.

They are likely to have a stronger interest/aptitude for the subject, and to have been more successful in their careers. Some of the respondent characteristics support this view. In all three surveys, those who had graduated within the previous five years were considerably over-represented (42% of respondents in 1989, 26% in 1999, and 59% in 2010), whereas those graduating more than 10 years previously were under-represented (26% in 1989, 41% in 1999, and 31% in 2010). Honors graduates, who typically form around 10% of our graduates, were over-represented in all three samples (16%, 18%, and 27% respectively).

Students entering the geography program are not required to select areas of concentration, but until recently the department issued "Notes and Guidelines" recommending several coherent course sequences, known as "structured majors." These were in marine/coastal studies, physical/environmental topics, urban and regional development, and a more diverse general/teaching option (which in effect means no concentration). As figure 1 shows, urban and regional development dominated as a concentration in both 1989 and 1999 (though with a slight decline), while marine/coastal declined considerably between those dates, and physical/environmental increased considerably (in part owing to the introduction of a Combined Geography/Geology B.Sc. in the mid 1990s). These trends have continued through to 2010: the marine/coastal concentration has almost disappeared (in part reflecting the retirement of Dr. Douglas Day in 1999), the physical/environmental concentration now dominates (reflecting the introduction of the B.Sc. in Geography in 2001, and the appointment of several physical geographers to the faculty), and the urban/regional focus is now in second place.

### Post-Graduate Programs

How long does it take for graduates to settle into a long-term career? In the period immediately following graduation, some are unable to secure a position commensurate with their educational attainment or their expectations. They are either searching for work, or view their current jobs as "stop-gaps." Many recognize the need to complement or augment their academic degree with further education oriented more specifically to marketable skills, while some enter Masters' degree programs, and still others choose to travel or take some "time off."

In order to separate initial experiences from long-term career paths, the questionnaire asked about the position six months after graduation. A six-month time lapse, or alternatively a "first destination" question, has been used in other graduate follow-up studies (e.g., Healey 1989, Clark and Healey 1990, Johnston 1990, Lukavsky *et al.* 1998, CSU 2002), and has the advantage of providing information both on further education and employment. Figure 2 compares the Saint Mary's results. The proportion entering the paid workforce directly has continued to decline since 1989, and by 2010 was only 20% of the sample. Conversely, those entering Masters programs or other types of post-graduate education have increased considerably, to 73%. The increase

partly reflects a trend within geography itself, as the discipline has become an important springboard into various facets of geomatics (which encompasses GIS, remote sensing, digital cartography, GPS, and geodesy). The increase may also be attributed in part to the health of the economy at the time of graduation, with further study being viewed as more attractive in times of recession. However, the percentage of graduates “searching” at six months remained fairly constant, in the 6% to 10% range.

In the 2010 survey 59% of the Saint Mary’s respondents reported completion of a post-graduate degree, diploma, or certificate, and a further 12% were currently enrolled in such a program, but had not yet graduated. The combined proportion of 71% is similar to the 70% reported for the U.K. by Clark and Higgett (1997), but somewhat below findings of 88% for geography graduates at the University of British Columbia (UBC Dept. of Planning & Institutional Research 2000). As figure 3 shows, the percentage of respondents with post-graduate education has remained fairly constant, but there has been an important shift in emphasis, with far fewer second Bachelor’s degrees, and far more technical diplomas.

In both the 1989 and 1999 samples, the most typical post-graduate degree was the Bachelor of Education (21% of respondents in 1989, down to 13% in 1999). By 2010 the percentage with the B.Ed. degree had fallen further to 6%. The decline reflects a

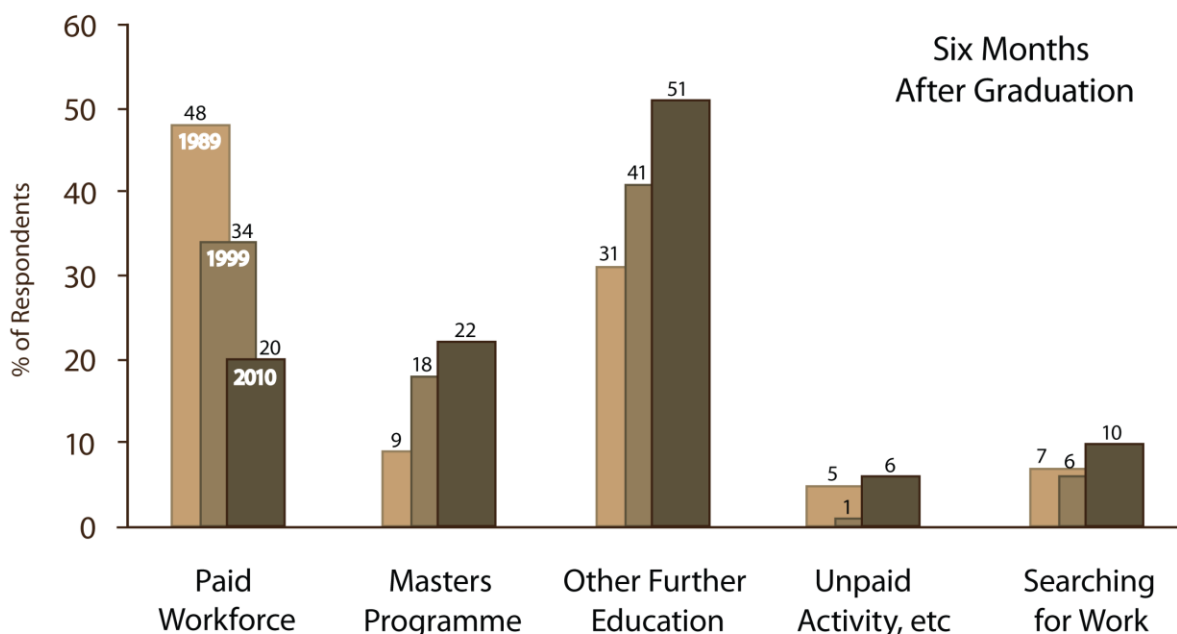


Figure 2. Situation six months after graduation.

near-freeze in the hiring of teachers in the 1980-2000 period, and the concomitant drop in the proportion of graduates entering teaching careers, from approximately 40% in the late 1970s (McCalla 1983, table 1) to less than 10% during most of the 1980's, 1990's, and 2000's. In all three surveys, a small number of respondents reported other second degrees, in a variety of subjects (e.g., law, architecture, environmental design).

The proportion of respondents acquiring Master's degrees has remained constant (figure 3), but there has been a shift in type: the most popular Master's degree in 1989 was in Education, followed by Planning, Geography/Environmental Studies, and Business. The order had changed considerably by 1999, to Planning, Business, Geography/Environmental, and Education. In the 2010 survey, Planning and Geography/Environmental Studies were equally popular, while no respondents reported Master's in Education or Business. A small proportion of our graduates have completed doctoral degrees in Geography.

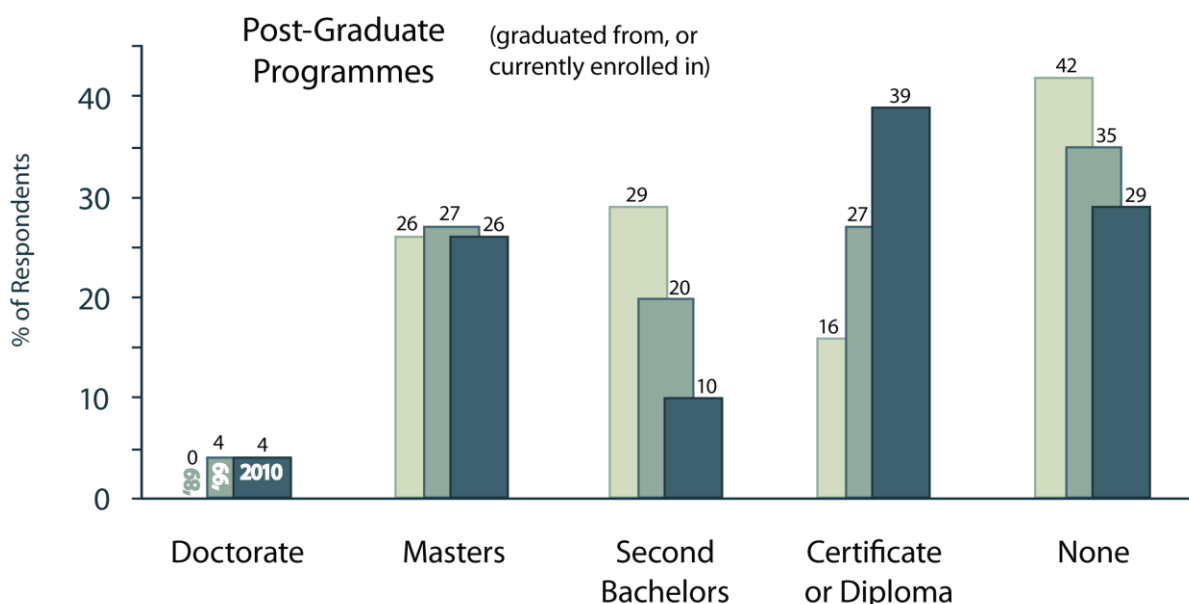


Figure 3. Respondents with post-graduate further education. Some respondents recorded themselves in two categories.

There has been a marked increase in the percentage of graduates with non-degree certificates or diplomas, from 16% in 1989 to 39% in 2010). Most of these are in various facets of geomatics, broadly conceived to include cartography, as well as geographic information systems (GIS) and remote sensing. There is high demand for geomatics expertise from both government and industry, and Saint Mary's graduates are well aware of the excellent range of geomatics programs at the Centre for Geographic Sciences of the Nova Scotia Community College (COGS, located in Lawrencetown, Annapolis County). In 2010, by far the most popular diploma acquired

by the survey date was the Advanced Diploma in Geographic Information Systems, awarded by COGS (27% of respondents).

### Current Employment Situation

Figure 4 shows the “current situation” of the respondents. In the 1989 and 1999 surveys, the two education choices could include either full- or part-time, so that multiple responses were allowed. The question was re-worded slightly in 2010, to specify only full-time education choices, and to allow only one choice per respondent. Even so, we see a rise in the percentage of responses for “other further education”, to 20%, and a large fall for those in the full-time paid workforce. These shifts reflect a real change in the propensity of graduates to acquire additional technical (usually GIS) training, but they also reflect that the majority of the 2010 sample were recent graduates (previous 5 years).

Work positions may be analyzed by both type of employer and type of position. In all three surveys, approximately 40% of employed graduates worked for private businesses, and 60% were employed in the public sector (compared with 51% and 49% reported by Gober et al (1995). Municipalities have increased considerably as employers, to 23% in 2010, whereas school boards have declined, from 18% in 1989 to

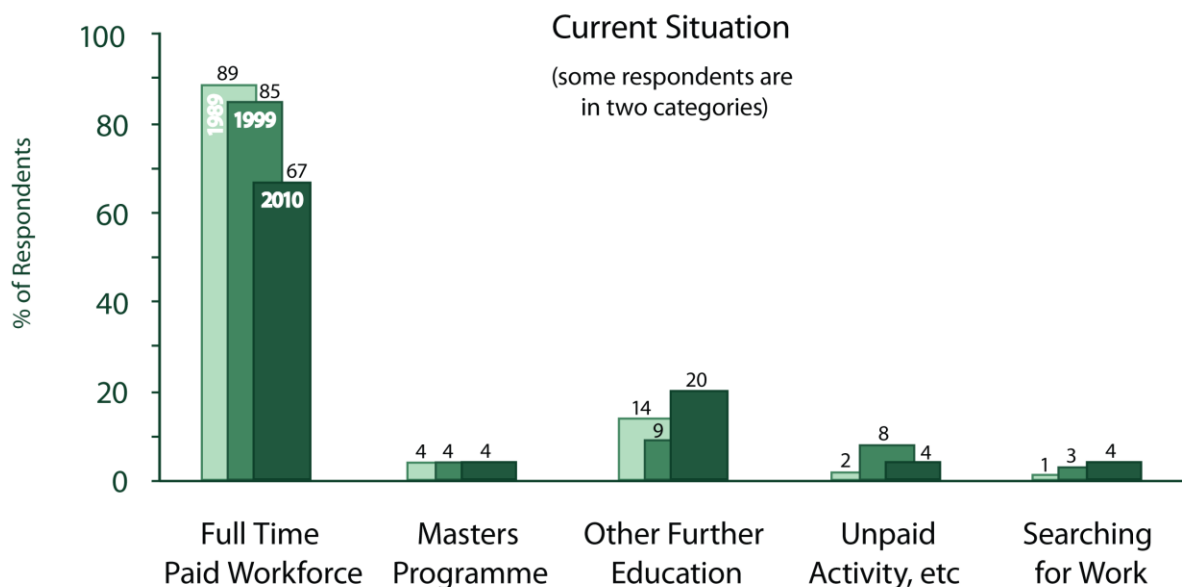


Figure 4. Current Situation. 1989 and 1999 totals do not sum to 100, owing to some double responses. Master’s and Further Education may be full- or part-time in these surveys, but full-time only in 2010.

only 3% in 2010. As noted earlier, there was a near-freeze in the hiring of teachers from 1980 through to c. 2000, reflecting the demographic “boom, bust, and echo” (Foot 2001). The increased take-up by municipalities related mostly to Planner and GIS-technician positions. When combined, the percentages working for provincial and federal governments have held fairly steady around 20%. Separately, however, these percentages varied considerably, with a notably steep fall in federal positions in the most recent period. This fall may partly reflect the delayed impact of severe federal cutbacks in the late 1990’s.

Optional questions in the surveys invited respondents to provide the name of their current employer, the type of goods or services provided by the employer, and the position held by the respondent. Table 1 merges responses from the 1999 and 2010 survey results, to illustrate the diversity of employing companies and agencies reported by respondents. This table should be viewed in conjunction with table 2, which provides a merged list of specific job titles, categorized by the type of good/service provided by the employer (loosely based on the sectors of the 2007 North American Industry Classification System). Response rates for these optional questions were high (60-70%), such that table 1 reflects responses from 97 graduates, and table 2 from 102 graduates. Note that similar job titles in table 2 were combined, and some titles had several respondents.

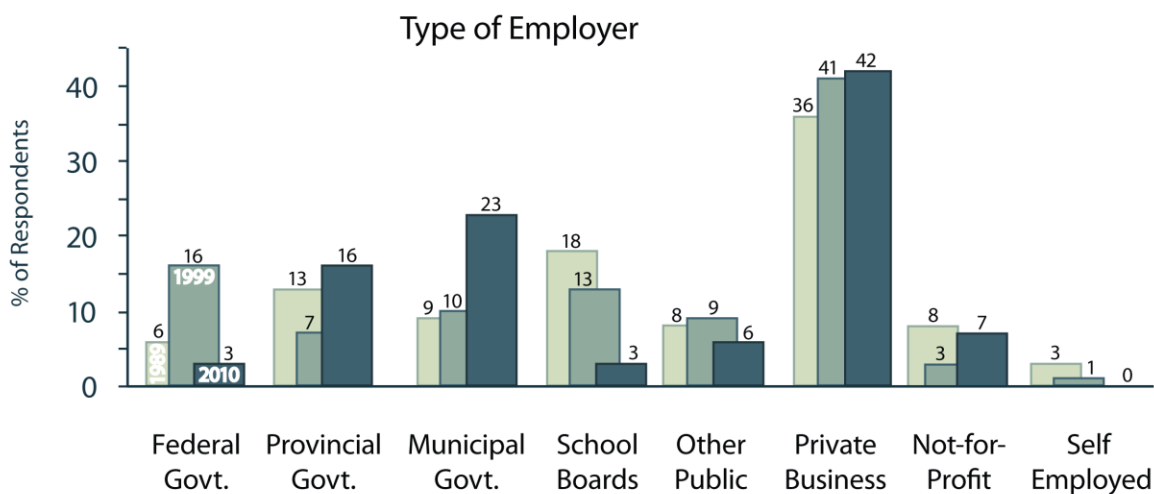


Figure 5. Types of employer, as percent of employed respondents.

Within government, many employing agencies provide services related to the environment, land-use planning, and resource management, and employ geographers specifically for their expertise in these areas, and/or for their technical skills related to mapping. In the Halifax area, there are regional offices of federal agencies such as Environment Canada, Fisheries and Oceans, and the Canadian Hydrographic Service, and provincial government departments such as Environment, Natural Resources, and Housing and Municipal Affairs (now re-named Service NS and Municipal Relations). These agencies employ many graduates in clearly "geographic" positions, as policy officers, planners, cartographers, GIS analysts, and GIS technicians. Larger municipalities such as the Halifax Regional Municipality employ geographers in a variety of positions, though with a strong emphasis on planners, development officers, planning technicians, and GIS specialists. In smaller municipalities geography graduates often combine all these roles, within small planning departments.

In the private sector, "individuals who can use, display, and analyze geographic information to solve spatial and environmental problems can find jobs in all kinds of businesses" (Gober et al. 1995, 332). Mapping and GIS skills are particularly important in certain kinds of industries, or for certain kinds of positions. Under "professional, scientific, and technical" (PST) services, there are companies engaged in engineering, planning, and environmental design and consulting. These companies employ cartographers, geomatics analysts, and GIS technicians. In the manufacturing sector, a surprising number of our graduates are now employed by the world's leading GIS software manufacturer, Environmental Systems Research Institute Inc. (ESRI), based in Redlands, California.

By combining information from responses to several survey questions, the positions listed were labeled as either "geographic" (those which normally require and utilize geographic training) or "non-geographic" (those which do not make specific use of geography training) (cf. Baine *et al.* 1992, ch. 3; Gober et al. 1995). Most public-sector positions listed in table 2 are geographic, while private sector positions are often non-geographic (particularly those outside the PST services and manufacturing sectors).

In 1989, only 43% of employed respondents were in identifiably geographic positions. The percentage increased to a majority (63%) in 1999, and a clear preponderance (84%) in 2010. Furthermore, the geographic positions themselves changed in nature over the 21 years, as seen in figure 6. The traditional avenue of teaching accounted for half of the geographic positions in 1989, but only one eighth of them in 2010. Land-use and environmental planning increased moderately over the two periods, as did "other geography related." Most employment in the latter category was in professional or managerial positions related to environmental or resource management. By far the largest gain has been in the geomatics field, which was in its infancy in 1989. By 2010 geomatics had become the "bread-and-butter" career option for nearly half of our employed graduates. Given the sampling procedures, however, we should stress that

Table 1. CURRENT EMPLOYERS, merged from the 1999 and 2010 surveys (97 responses).

<p><b>Federal/National Government</b></p> <ul style="list-style-type: none"> <li>Canadian Hydrographic Service</li> <li>Environment Canada</li> <li>Fisheries and Oceans</li> <li>National Defence</li> <li>National Research Council</li> <li>Parks Canada</li> <li>Revenue Canada</li> <li>Cayman Islands, Dept. of Current Planning</li> </ul> <p><b>Provincial Government</b></p> <ul style="list-style-type: none"> <li>N.S. Environment</li> <li>N.S. Transportation &amp; Public Works</li> <li>N.S. Housing &amp; Municipal Affairs</li> <li>N.S. Education</li> <li>N.S. Alcohol &amp; Gaming Authority</li> <li>N.B. Rural Planning District Commission</li> <li>Ontario Development Corporation</li> <li>Emergency Management Ontario</li> <li>Tasmania (Australia), Parks &amp; Wildlife Service</li> </ul> <p><b>Municipal Government</b></p> <ul style="list-style-type: none"> <li>Halifax Regional Municipality, N.S.- various</li> <li>Town of Wolfville, N.S., Planning Dept.</li> <li>Municipality of East Hants, N.S.</li> <li>City of Ottawa, Ontario, Housing Branch</li> <li>Town of Olds, Alberta</li> <li>Killingly, Conn., Planning &amp; Engineering Dept.</li> </ul> <p><b>School Boards</b></p> <ul style="list-style-type: none"> <li>Halifax Regional, N.S.</li> <li>Chignecto Central Regional, N.S.</li> <li>Annapolis Valley Regional, N.S.</li> <li>Southwest Regional, N.S.</li> <li>Ottawa-Carleton Catholic, Ontario</li> <li>Parkland, Alberta</li> <li>City of Kimitsu, Japan</li> </ul> <p><b>Not-for-Profit Organizations</b></p> <ul style="list-style-type: none"> <li>Downtown Business Improvement Area (Kingston, Ont.)</li> <li>Intl. Assn. for Time Use Research</li> <li>Nova Scotia Nature Trust</li> </ul>	<p><b>Other Public or Semi-Public Bodies</b></p> <ul style="list-style-type: none"> <li>Cumberland Joint Service Management Authority (N.S.)</li> <li>Nova Scotia Community College</li> <li>Mount Allison University</li> <li>McGill University</li> <li>Saint Mary's University</li> <li>Pictou District Planning Commission, N.S.</li> <li>Royal District Planning Commission, N.B.</li> </ul> <p><b>Private Business (by type)</b></p> <ul style="list-style-type: none"> <li>Automobile fuel systems</li> <li>Cartography</li> <li>Construction contracting</li> <li>Computer services</li> <li>Dental practice</li> <li>Environmental services/consulting</li> <li>Events management</li> <li>Excavation</li> <li>Fish processing</li> <li>Flying club</li> <li>Geomatics / GIS consulting</li> <li>GIS software</li> <li>Insurance brokerage</li> <li>Law firm</li> <li>Management consulting</li> <li>Map publisher</li> <li>Marine engines</li> <li>Marine surveys</li> <li>Media/marketing magazine</li> <li>Nutrition</li> <li>Oil &amp; Gas exploration</li> <li>Printing &amp; Packaging</li> <li>Remote Sensing</li> <li>Retail gift shop</li> <li>Seismic surveys</li> <li>Telecommunications</li> </ul> <p><b>Self-Employed</b></p> <ul style="list-style-type: none"> <li>Architect</li> <li>GIS analyst</li> </ul>
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Table 2. LIST OF CURRENT POSITIONS, merged from the 1999 and 2010 surveys, by industry groups based on NAICS 2007 sectors (102 responses).

<p><b>Public Administration—Federal</b></p> <ul style="list-style-type: none"> <li>Geomatics Specialist</li> <li>Community Liaison Officer</li> <li>Oceans Policy Officer</li> <li>Environmental Management System Co-ordinator</li> <li>Development Planner</li> <li>Hydrographer</li> <li>Computer Network Systems Co-ordinator</li> <li>Secretary</li> <li>Collections officer</li> <li>Warship Captain</li> <li>Fishery Officer</li> </ul> <p><b>Public Administration—Provincial</b></p> <ul style="list-style-type: none"> <li>Environmental Planner / Analyst</li> <li>Commercial Property Assessor</li> <li>Manager, Policy and Research</li> <li>Water Monitoring Specialist</li> <li>Property Manager</li> <li>Program Development Officer</li> </ul> <p><b>Public Administration—Municipal &amp; Regional</b></p> <ul style="list-style-type: none"> <li>Planner</li> <li>Development Officer</li> <li>Planning Technician / Technologist</li> <li>Transportation Analyst</li> <li>GIS Technician / Technologist / Analyst</li> <li>Manager, Affordable Housing Unit</li> <li>Architect</li> <li>Internal auditor</li> </ul> <p><b>Education—Post -Secondary</b></p> <ul style="list-style-type: none"> <li>Associate Professor (geography)</li> <li>GIS Technical Assistant</li> <li>Research Co-ordinator</li> </ul> <p><b>Education—Secondary &amp; Elementary</b></p> <ul style="list-style-type: none"> <li>Teacher (geography)</li> <li>Project Co-ordinator (mapping)</li> <li>Assistant Language Teacher (ESL)</li> <li>Vice-Principal</li> <li>Teacher (special education)</li> </ul>	<p><b>Resource Industries</b></p> <ul style="list-style-type: none"> <li>Head Supervisor (fish products)</li> <li>Project Co-ordinator (oil &amp; gas)</li> </ul> <p><b>Manufacturing, Utilities &amp; Construction</b></p> <ul style="list-style-type: none"> <li>GIS Software Developer</li> <li>GIS Technician / Technologist</li> <li>Digital Cartographer</li> <li>GIS Product Engineer</li> <li>Manager (construction)</li> <li>Account Manager (GIS)</li> <li>Manager (printing)</li> <li>Sales Manager</li> <li>Vice-President (printing)</li> <li>Quality Engineer (automotive)</li> <li>Vice-President, sales</li> </ul> <p><b>Professional, Scientific &amp; Technical Services</b></p> <ul style="list-style-type: none"> <li>GIS Technician / Technologist</li> <li>Geomatics Specialist / Analyst</li> <li>Project Manager (IT)</li> <li>Remote Sensing Specialist</li> <li>Cartographer</li> <li>Environmental Technologist</li> <li>Operations Manager (event mgt.)</li> <li>Architect</li> <li>Sales Manager (computer services)</li> <li>Art Director (advertising)</li> </ul> <p><b>Trade &amp; Transport</b></p> <ul style="list-style-type: none"> <li>Sales Clerk</li> <li>Commercial Pilot</li> </ul> <p><b>Other Services</b></p> <ul style="list-style-type: none"> <li>Financial Analyst (telecom)</li> <li>Account Manager, sales (telecom)</li> <li>Insurance Broker</li> <li>Nutrition Services</li> <li>Receptionist (dental)</li> <li>Researcher (non-profit organization)</li> </ul>
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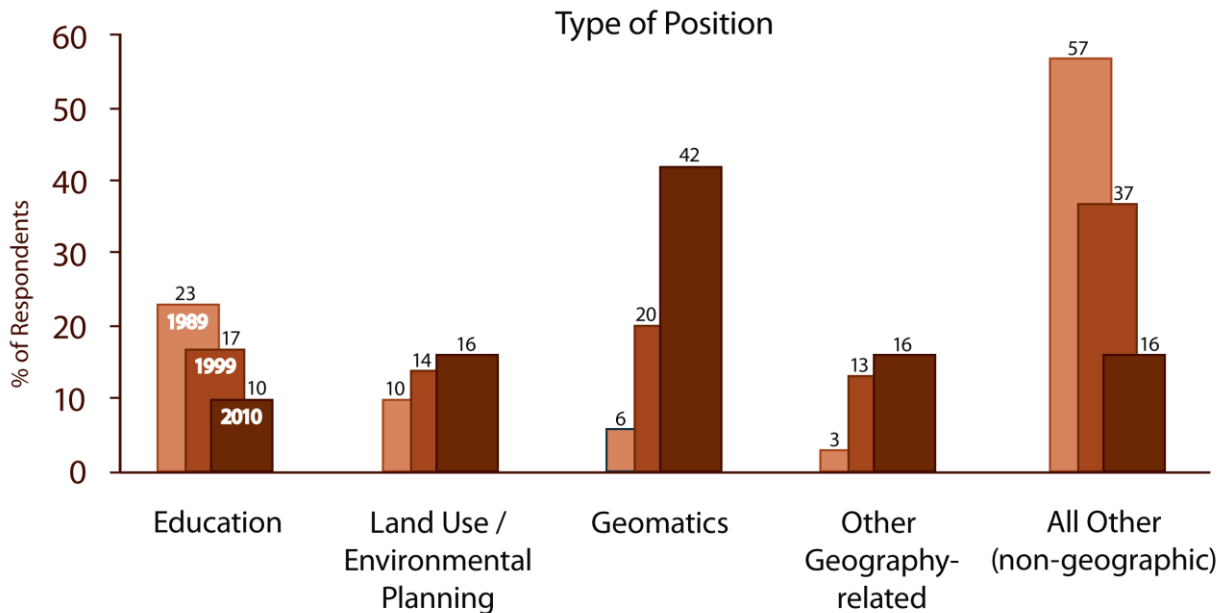


Figure 6. Types of position, as percent of employed respondents.

respondents in all geography-related positions are likely to be over-weighted in the samples.

Saint Mary's graduates were asked to self-rate the utility of their geographic training, as follows: "to what extent was your geography education necessary and/or useful to your present employment (or previous employment if you are presently not working)." Even in 1989, few graduates dismissed their degree as "neither necessary nor useful," but the modal response was "not necessary but useful" (figure 7). By 1999, a considerable shift had occurred in the percentage of respondents indicating "both necessary and useful" (up from 33% to 46%). This trend continued, such that in 2010 over two-thirds of respondents checked "necessary and useful." These self-ratings of degree utility, taken with findings on further training and type of position, confirm distinct shifts over the 21-year period towards (i) professional careers in planning or environmental management, and (ii) technical careers in geomatics, with a focus on GIS. The geography degree now provides a high degree of "employability" (Gedye et al. 2004), and may be viewed as a "semi-professional" qualification (Gober et al. 1995).

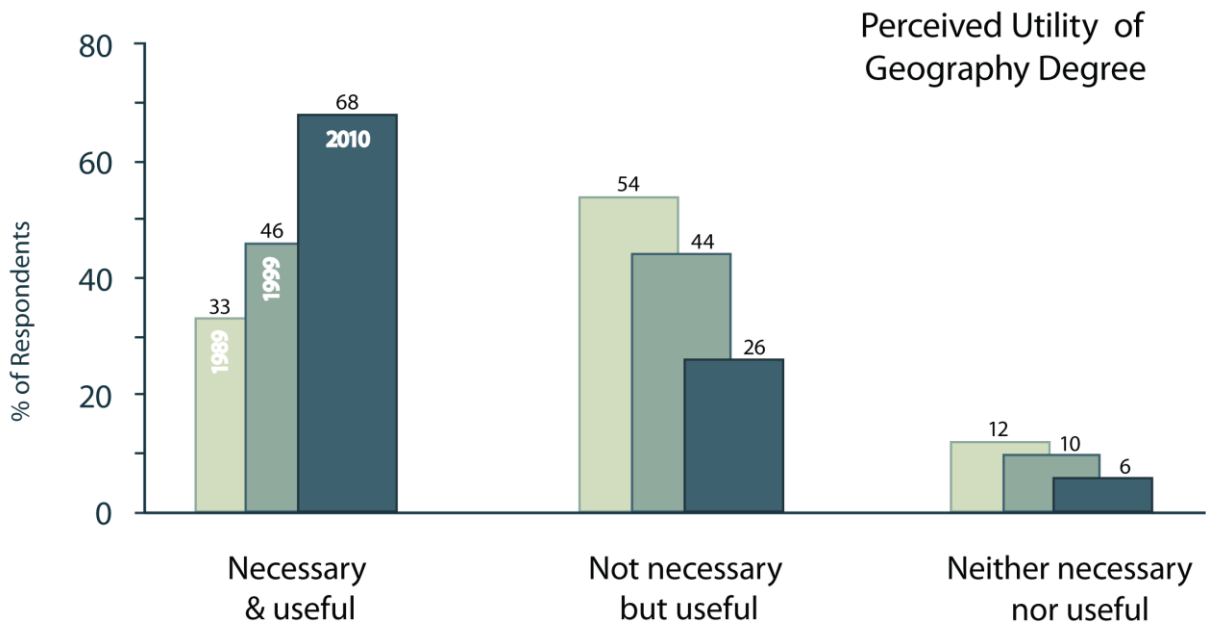


Figure 7. Perceived utility of the geography Bachelor's degree, in relation to present employment.

Respondents in paid work were asked to rate their job satisfaction, on a 5-point Likert scale. As figure 8 shows, these ratings were gratifyingly high in all three surveys. There was also a slight shift towards higher satisfaction ratings through time, as one might expect given the higher proportion of graduates directly utilizing their geographic training. In 1989 and 1999 "high" was both the modal and median response, whereas in 2010 the mode was "very high" and the median was "high."

### Summary and Conclusions

The three surveys reported in this paper provide a valuable longitudinal view of trends in employment for Saint Mary's geography graduates (and are indicative for all Canadian geography graduates). The surveys used almost exactly the same questionnaire, and similar procedures to identify and contact former students, so that their results are highly comparable. Given the nature of the sampling approach, however, the samples are clearly weighted towards recent graduates, and to those with continuing links to the Saint Mary's geography department. An important consequence is that respondents have a greater likelihood than the average graduate of entering post-graduate programs, and of taking up geography-related employment.

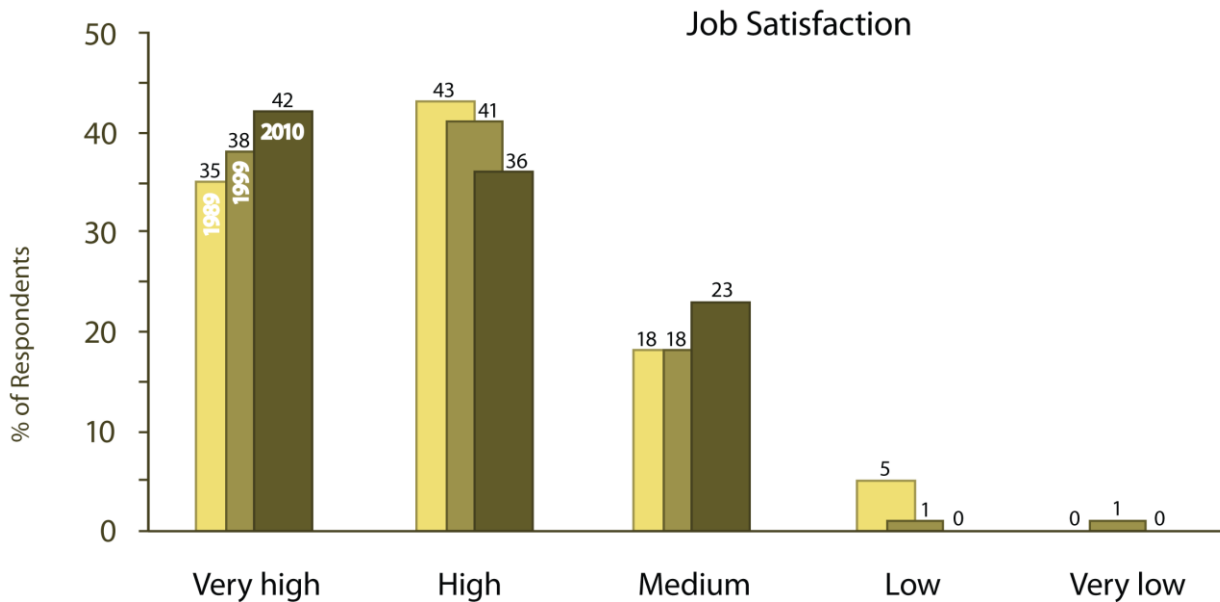


Figure 8. Job satisfaction, for employed respondents.

The three surveys show a number of clear trends over the 21-year period, which reflect important shifts in the nature and “marketability” of the geography degree. The major changes noted between 1989 and 2010 are as follows:

- more graduates had a physical/environmental concentration in geography
- six months after graduation, fewer graduates were in the paid workforce
- more graduates took post-graduate certificates or diplomas, usually in geomatics
- more employed graduates hold geography-related positions (up from 43% to 84%)
- far fewer employed graduates are teachers (down from 23% to 10%)
- far more employed graduates hold positions in geomatics (up from 6% to 42%)
- more graduates perceive their geography degree as both necessary and useful to their current position.

Taken together, this set of changes paints a consistent picture. Saint Mary’s graduates are now highly likely to use their geography degree as the basis for a geography-related career. Such careers are increasingly in the technical fields of geomatics, and geomatics is all about mapping, so that in many ways the subject may be seen as returning to its roots. But geomatics is also tied to very specific technologies, which require specific training within the undergraduate curriculum, and often rigorous advanced post-graduate training. As a consequence, there is increased tension (Zhou et al. 1999, Le Heron and Hathaway 2000) within university geography between the need to provide technical training, which is increasingly demanded by our student clientele and employees (Clark and Higgitt 1997, Gedye et al. 2004), and the desire to retain the scholarly and philosophical underpinnings of the discipline.

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