

SFU

Gerontology Graduate Training in North America: Shifting Landscapes, Innovation and Future Directions

By

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Mitchell

A Report Prepared for and Funded by Dean of Graduate
Studies (Simon Fraser University) SCORE Program:
Strengthening the Core Fund for Innovation in Graduate
Education

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Executive Summary

As the Canadian population ages it is anticipated there will be an increased demand for students with advanced training in gerontology. In today's highly fluid and competitive environment, the challenge for gerontology graduate programs will be how to attract the best and brightest students and provide them with the knowledge base and skillsets that they will need in order to be successful. Yet, very little research has been conducted on the state of gerontology graduate education in North America with a focus on Canadian programs. Given this gap, the purpose of this report is to: a) report on current trends in gerontology graduate education and b) highlight innovations and potential future directions for the discipline in general, and the Simon Fraser University (SFU) graduate programs in gerontology, more specifically. This report was funded by the SFU, Dean of Graduate Studies SCORE program: Strengthening the Core Fund for Innovation in Graduate Education.

For this project a total of 40 eligible English language gerontology graduate programs (doctoral or master's level) offered by Canadian or American universities were identified. Interviews were conducted with 23/40 universities and data were collected on a number of topics such as target students, marketing and publicity methods, and program requirements. Some supplementary data were also collected from online information sources. Of the universities in the sample, 10 offer doctoral level programs (total of 12 programs) and 20 offer master's level programs (total of 24 programs). Eight of the universities are Canadian and fifteen are American.

The following is a summary of the key findings of this project:

- In the sample, gerontology education is offered by 2 universities through a gerontology (or aging) school, 8 through a gerontology (or aging) department or combined department, and the other 13 offer gerontology education through programs housed in research centres/institutes (4/13) or other departments, schools, or colleges (9/13).
- Number of students varies from 4-53 students at the doctoral level (average = 24) and 2-350 students at the master's level (average = 36).
- The students in gerontology graduate programs are very diverse coming from a wide range of undergraduate majors and backgrounds. Many students in the programs do not have a gerontology background.
- For master's programs the majority of universities (15/20) identified their students as being a mix of professional and academic students. The other 5/20 universities primarily

target professionals who desire graduate level training. For doctoral programs, the target students are primarily those who seek an academic or research career.

- Ten of the universities offer doctoral level gerontology programs and twenty offer master's level programs. There is an equal split between MA and MS degrees.
- Almost all of the universities have additional gerontology education available (21/23), and the most common additional programs are graduate certificate or diploma (13/23) and undergraduate minor, concentration, or option (10/23).
- All of universities described their programs as interdisciplinary (or a variation of interdisciplinary).
- The total number of courses which must be completed at the master's level ranges from 4-12 and at the doctoral level 4-19.
- For master's programs the most common required or optional courses are research methods (19/24), policy (17/24), health (14/24), sociology (10/24), and psychology courses (10/24).
- For doctoral programs the most common required or optional courses are research methods (9/12), health (7/12), biology (6/12), psychology (5/12), and professional development courses (5/12).
- All doctoral programs require students to complete a comprehensive/qualifying exam and a thesis/dissertation. For the master's programs, 54% of programs (13/24) offer both thesis and capstone options. A project is the most common capstone option offered.
- At the master's level an internship or practicum is required or optional for 15/24 programs (9 required, 6 optional) and is the most common opportunity for work experience or applied learning. Six out of the nine programs which do not have a required or optional internship or practicum are Canadian.
- Other opportunities offered by universities for work experience and applied learning include: research experience, informal opportunities for work experience, professional development and applied courses, career-related events, mentoring/advising, alumni, and other.
- Advertising through their website is the most common marketing and publicity method used by universities. Other methods include: student outreach, print materials,

community engagement, conferences, gerontology society/association, e-mail, and additional web advertising.

- The cost of enrollment in a gerontology graduate program ranges from approximately \$1,500 to \$24,000 per semester. Tuition for Canadian universities is noticeably cheaper than American universities.
- All of the universities identified some forms of funding available for gerontology graduate students. All of the universities offering doctoral programs offer funding to doctoral students, commonly as a guaranteed funding package or graduate assistantship. At the master's level there tends to be less funding available.
- Scholarships (17/23) and research assistant (14/23) or teaching assistant work (12/23) are the most common funding opportunities available for students.
- Alumni were stated to have high success rates in finding aging-related careers after completion of their degree. Estimates of job placement rates in aging-related careers were between 75-100%.
- The most commonly mentioned careers for students were academia (17/21), health care (13/21), continuing care (12/21), and non-governmental organizations (9/21).
- Level of interaction with alumni appears to be low to moderate, with alumni interaction identified as an area for improvement by several universities.
- The most common form of interaction with alumni is invitations to attend gerontology events. Other forms of alumni interaction include: keeping in touch, speaking and teaching opportunities, internship or practicum sites, research and academic activities, alumni associations, mentorship, informal contact, alumni recognition, sigma phi omega, and scholarships.
- A total of 14/23 universities (7/8 Canadian universities) report they have a gerontology-related research centre/institute present at their university.
- The most commonly identified strengths/innovations of gerontology programs were program identity and pedagogical approach; interdisciplinary or multidisciplinary nature of the education; and the broad range of educational experiences available.

From this research, it is evident that gerontology graduate education programs are diverse, with a variety of structures and offering a wide range of educational experiences. Some commonalities

emerged in gerontology graduate education, including: emphasis on providing interdisciplinary education; offering of internship or practicum at the master's level; movement towards course-based programs at the master's level; and research, policy, health (including physiology, biology, etc.), sociology, and psychology courses as the core foundations of gerontology education.

One of the most salient innovations in gerontology graduate education is the integration of gerontological training with opportunities provided by community/organizational partners, research affiliates, and alumni to foster applied learning experiences in research, policy and practice.

Some noticeable differences also emerged between gerontology graduate education in Canada and the U.S. In the U.S. there has been a greater shift towards applied education, and this is most noticeably demonstrated by the fact that all American universities offer an internship or practicum option. Canadian programs also are smaller in size and tuition is much less costly. Canadian programs tend to require a smaller number of courses and have less structure than their American counterparts.

Our research found that gerontology doctoral level and master's level programs in the U.S. and Canada appear to be on two different paths of development. At the doctoral level, the path is a straight road with the continuation of traditional academic practices. At the master's level, on the other hand, the road has more potential pathways for training and education. The traditional thesis-based approach is no longer the norm. Overall, a shift towards more applied gerontology education was observed, particularly in the U.S. This is evidenced by practicum or internship requirements, offering professional development courses or seminars, introduction of capstone options, and offering applied skills courses (e.g., management, counseling, etc.). Furthermore, there also has been the development of online master's degrees, which were not included in this sample.

From this research a number of important areas for reflection have been identified for the SFU gerontology graduate programs. How can our programs best leverage the resources available through community/organizational partners, research affiliates, and alumni? What is the right mix of coursework, applied learning, work experience, and research experience to provide students with the skills they need to succeed? Should separate programs be designed to meet the needs of professionals versus traditional academic students? Should programs tailor themselves to a niche market or attempt to have broad appeal? What differences are there in the quality and experience of an online versus in-class degree? What distinguishes a course-based master's degree from a gerontology graduate certificate?

In order for the field of gerontology to continue to develop, gerontology graduate programs need to be innovative and adapt to the changing needs of society. Our findings suggest opportunities

to retrofit gerontological education at SFU to better align with student career needs, shifting workforce demands, and population aging changes. Many programs seem to have embraced providing students with a mix of academic skills, applied skills, and work experience as the way forward. Others have opted for online graduate education with its limitations. The question that programs, including SFU's, must ask themselves is how can we best provide students with the right mix of skills to be successful in a changing and increasingly challenging job market? This report was used as a key document to stimulate discussion among the gerontology faculty at SFU. This led to a set of initial recommendations that will form the foundation for program review, enhancement and innovation.

1. Introduction

The field of Gerontology is preparing for a massive and rapid aging of the Canadian population, given the placement of the baby boomers in the age structure coupled with extensions in life expectancy. Indeed, Gerontology has undergone a significant transformation in recent years. It has moved beyond the *Formative Phase* of educational development – in which gerontologists are only trained in traditional departments; into the *Mature Phase* – characterized by educational training that blends applied and basic skills within a truly interdisciplinary environment. Alkema and Alley (2006) published a watershed editorial in *The Gerontologist* entitled, “Gerontology’s Future: An Integrative Model for Disciplinary Advancement.” They argue that the field of Gerontology has developed into a discipline, based on four elements critical to its evolution – theory, research methodology, formalized organizations supporting the field of study, and a common vernacular. The Department of Gerontology at Simon Fraser University (SFU) would add to this list the translation of interdisciplinary knowledge into innovative programs, services, policy reform, and transformative social change.

The challenge moving forward is how to attract the best and brightest students into this burgeoning field in a highly fluid and competitive economic, educational, and workplace environment. To date, limited research has been conducted on the state of gerontology graduate education in North America (and Canada in particular), and as the gerontology landscape is rapidly changing it is important to have up to date information on the field available. The purpose of this report is to a) report on current trends in gerontology graduate education and b) highlight innovations and potential future directions for gerontology graduate education with a focus on SFU’s programs.

2. Literature Review

In both Canada and the U.S., development of gerontology as an educational field first began to make significant strides in the 1970s and 1980s. Developments were influenced by the baby boom cohort, growth of the older adult population, and the expansion of social programs and services for older adults (Andrews, Campbell, Denton & McGilton, 2009; Sterns & Ferraro, 2007). During this wave of development the Association for Gerontology in Higher Education (AGHE) was formed in 1974 with the focus of promoting gerontology education (Sterns & Ferraro, 2007). Currently, multiple types of gerontology education programs exist in Canada and the U.S. at both the undergraduate and graduate level (Andrews et al., 2009; Sterns & Ferraro, 2007).

A similar inquiry to the one in this report was previously conducted on gerontology graduate education in the U.S. by Haley and Zelinski (2007). The authors reported on gerontology graduate education in the U.S. with a primarily historical approach, focusing on the University of South Florida and the University of Southern California as case examples. Haley and Zelinski reported that in 2000 there were master’s level gerontology programs at 57 universities in the

U.S. according to AGHE. The first two programs began in 1967 and since then this number has grown significantly, but now appears to have plateaued and possibly even is entering a period of retrenchment as some master's programs have struggled to survive in recent years.¹ One of the major challenges for gerontology master's programs identified by Haley and Zelinski is the fact that they do not provide licensure similar to other professions. The authors suggest that in order for the discipline to continue to flourish, programs need to provide students with more applied skillsets (e.g., administration, management, etc.) or licensure needs to become required for certain employment positions. At the doctoral level, Haley and Zelinski reported that there were nine doctoral programs in the U.S. at the time of the production of their manuscript, with the first program having been established in 1989. Based on statistics from the four largest programs, Haley and Zelinski reported that a large number of doctoral graduates (40-50%) obtain faculty positions, though it was noted that a challenge for doctoral graduates is competing with graduates from other disciplines (e.g., social work, psychology) who may have a greater number of positions and versatility in terms of teaching opportunities.

In this literature review, no review of the current state of Canadian gerontology graduate education was found, though Andrews et al. (2009) have published an article more broadly about the history of gerontology in Canada. The authors found that sociology of aging courses were first offered in the field in the early 1970s and that the first undergraduate degrees in gerontology were offered in the mid-1980s. The first master's degree in gerontology was offered in 1989 (SFU's opened in 1996) and doctoral programs were introduced in the early 2000s (Andrews et al., 2009).

Other authors have reviewed gerontology graduate education in Europe (Meyer, 2003), the Nordic countries (Hietanen, Lyyra, Parketti, & Heikkinen, 2012), Latin America (Bos, Padilha, Bos, & Gomez, 2007), the Asia-Oceania region (Russell, Mahoney, Hughes, & Kendig, 2007), and Japan (Tsukada & Tatara, 2005).

Meyer (2003) reviewed gerontology education in Europe and a total of 58 gerontology programs were identified, 40 of which were classified as graduate programs and equivalent. Meyer (2003) noted that there has been a considerable imbalance in the distribution of gerontology degree programs across Europe, with distribution ranging from 0 in several of the countries to 16 programs located in the United Kingdom. There has been a wide variety in the types of programs and program requirements as well due to differing higher education structures and legal frameworks throughout Europe. Meyer (2003) also reported on the European Master in Gerontology (EUMAG) which is a joint European Master's degree designed to share expertise, help standardize gerontology education, provide opportunities for collaboration, and offer access to students in regions without gerontology graduate education (primarily Southern and Eastern Europe).

¹ The AGHE Membership Committee Report from 2015 suggests significant retrenchment as only 153 institutional members were reported, and Haley and Zelinski reported 280 institutional members of AGHE in 2000.

Hietanen et al. (2012) reported on gerontology higher education in the Nordic Countries (Finland, Denmark, Iceland, Norway and Sweden), based on an online survey that included questions on a number of aspects of gerontology education. Hietanen et al. (2012) found the first Nordic master's level program was offered in Finland in 1991, and currently there are seven master's degree programs. Three of these programs are offered by a single university in Finland, two in Sweden, and one each in Iceland and Norway. In addition, a joint master's degree is available as a collaboration between universities in Finland, Sweden, and Iceland. The authors noted that the majority of gerontology graduate degrees are offered in Finland, Sweden, and Iceland, while gerontology is commonly offered as post-vocational education or specialization after completing a degree in Denmark or Norway.

Bos et al. (2007) identified a total of ten gerontology/geriatrics graduate degree programs offered by six Latin American countries (four in Brazil, two in Argentina, and one each in Uruguay, Peru, Cuba, and Colombia). The authors specifically analyzed the graduate programs in Brazil and Colombia and found that programs commonly take a life-course approach to gerontology and curriculum has three main components: theory, research methods, and electives. Programs are usually targeted towards health and social care professionals. Bos et al. (2007) noted that only 6/21 countries in Latin America offer graduate level gerontology/geriatrics education, and they identified a significant gap in gerontology/geriatrics education in the region.

In the Asia-Oceania region Russell et al. (2007) found 11 master's programs via web searches, 6 of which are offered by Australian universities, 2 as cross-national partnerships between Australia and another country (Singapore and Hong Kong), and 1 each in Hong Kong, China and New Zealand. The authors noted that culture and policy agendas influence the development of gerontology-related programs in the region. It was noted that among Australian universities there has been a trend towards flexible and distance education in gerontology, and four of the Australian programs are offered fully or primarily online.

While Japan has the largest proportion of older adults in the world, Tsukada & Tatara (2005) reviewed gerontology programs in Japanese higher education and found only one doctoral program and one master's program offered in Japan. Furthermore, only 4/702 universities in Japan offer undergraduate courses in gerontology, and 5/529 offer graduate level courses. Since the mid-1990s academics in the field of gerontology in Japan have been aware of this lag in the development of gerontology education and have identified the need to develop gerontology programs. One of the major challenges to developing gerontology programs identified by Tsukada and Tatara (2005) is the fact the Ministry of Education, Culture, Sports, Science, and Technology controls almost all aspects of education in Japan, and that a new program would need to be initiated by a decree in law.

As can be seen in this literature review, there is significant variation in the level of development of gerontology graduate education around the world. In North America, the last review of gerontology graduate education in the U.S. was conducted almost ten years ago, and there is no

equivalent review that has been conducted in Canada. There are also some areas of gerontology education which do not appear to have been explored in previous literature (e.g., interaction with alumni, program marketing and promotion methods, etc.). This report seeks to fill the gap in the literature and provide valuable updated information on aspects of gerontology graduate education in Canada and the U.S.

3. Research Methods

For this report, English language gerontology graduate programs² (doctoral or master's level) offered by Canadian or American universities were searched for and identified using the AGHE print directory, AGHE online directory, National Initiative for the Care of the Elderly student resource list, and general web searches. In order to be relevant and comparable to gerontology programs offered at SFU, programs were excluded if they:

- (a) did **not** primarily focus on gerontology (e.g., MA in Sociology with Specialization in Gerontology)
- (b) did **not** have specific curriculum requirements (e.g., individualized degree)
- (c) were gerontology programs for specific health/allied health professionals (e.g., MSW in Gerontology);
- (d) were offered completely online with no on-campus options/components
- (e) were offered by a college, or by a university with ~5,000 students or less

A total of 40 potential universities were identified for inclusion, and interviews were conducted with 23 of these universities.³ An introductory letter and copy of the interview questions was sent by e-mail to the graduate chair/coordinator (or another appropriate individual) at each university in order to introduce the project and to ask for their participation. Participants were informed of the purpose of the project and also that they would be sent a copy of the findings after completion of the project.

For the 17 eligible universities that did not participate, basic information about their gerontology education is provided in Appendix 1. Of the 17 universities not included, 2 offer doctoral programs and 16 offer master's programs (7 MS, 8 MA, 1 MS or MA) that meet the inclusion criteria. All but two of these universities offer additional gerontology education options (e.g., graduate certificate or diploma; bachelor's degree or major; undergraduate minor, concentration or option; etc.).

² Not all of the programs included in the sample consider themselves to be gerontology programs, and some would classify themselves as for example an aging program instead. For ease of use all of the programs in this report are referred to as gerontology programs here.

³ The University of Maryland Baltimore (UMB) and University of Maryland, Baltimore County (UMBC) offer a joint doctoral degree in gerontology and are counted in this report as one university.

The final sample for this project included 23 universities in Canada and the U.S. offering gerontology graduate programs at the master's or doctoral level. Of the universities included, 10 offer doctoral programs and 20 offer master's level programs (Appendices 2 and 3 provide overviews of the master's and doctoral programs included in the sample). Eight of the interviews were conducted with all current Canadian universities that met the criteria⁴ and the other fifteen with American universities.

Interviews were conducted with an individual from each university who is in a position to be able to reflect on their gerontology program (usually the graduate program chair or equivalent). Interviews were conducted by telephone/skype, or participants had the option of sending a written response. Eight universities chose to complete their interview by written response. The interviews were completed over the period of January-March 2016 (with one additional interview conducted in June 2016). The qualitative data analysis program NVivo was used to code and organize the data collected. Analysis was primarily conducted at the university level, but for some areas the individual programs were examined.

The interview questions collected data on: target students; publicity/marketing methods; opportunities for work experience; culminating experiences; number of students; number of graduates; alumni jobs; program interaction with alumni; gerontology-related research centres; student funding; tuition costs; and strengths/innovations of the programs. Additional data were also collected through university websites over the period of summer 2015 to spring 2016, including general descriptions of the programs; size and composition of the academic unit; and the coursework and curriculum.

The following section will present a summary of the findings from this research.

4. Summary of Findings

Program Structure

The level of development of gerontology education at each university varied, with gerontology education offered through three different levels of academic units (program, department or school). Gerontology (or aging) schools or departments have dedicated core faculty members available to support the program, though some departments rely heavily on cross-appointed, adjunct, or affiliated faculty. In the case of combined departments, not all faculty members may be involved with the gerontology program. Information available online shows that the faculty size for schools/departments ranges from as few as 2 to as many as 18 core faculty members (plus there are often adjunct faculty members, lecturers, etc.). For programs not housed in a gerontology school or department, most have a faculty member assigned as a dedicated program coordinator, and some have additional faculty members assigned to the gerontology program.

⁴ It should be acknowledged that in Canada the Université de Sherbrooke has both doctoral and master's programs in gerontology, but was excluded from the sample as it is a French language university.

Other faculty members or affiliated faculty (other than core faculty) provide supplementary support, and some programs utilize an interdisciplinary faculty-base.

The sample includes the only two gerontology (or aging) schools in North America known to the authors (University of South Florida and University of Southern California). A total of eight universities in the sample offer gerontology education through a gerontology (or aging) department or combined department. The other thirteen offer gerontology education through programs housed in research centres/institutes (4/13) or other departments, schools, or colleges (9/13). The University of Waterloo is a unique case in this category since previously gerontology programs were offered through the Department of Health Studies and Gerontology. That department now has now been transformed into the broader School of Public Health and Health Systems.

Size of Programs

The number of students enrolled in gerontology graduate programs varies by university and type of programs available, in particular distance options. At the master's level the number of gerontology students varies from 2-350 (see Appendix 2). The University of Southern California Leonard Davis School of Gerontology has the largest number of master's students (approximately 350), and is the largest gerontology school in North America. At the doctoral level, the number of students varies from 4-53 (see Appendix 3).⁵ The largest number of doctoral students are at the University of Massachusetts, Boston. The average number of students⁶ for the doctoral level is 24 and for the master's level is 36 (SFU is close to this average at the master's level but below the average at the doctoral level). The American graduate programs are notably larger than the Canadian programs.

Target Students

The students in gerontology graduate programs are very diverse, originating from a wide range of undergraduate majors and backgrounds. The most common undergraduate majors include: health, nursing, social work, sociology, psychology, policy, or a science degree. Several universities with undergraduate or certificate programs specifically target students from these programs, and post baccalaureate or graduate certificates can act as a transition point into a master's program. A few of the universities mentioned that while ideally students would have some educational background in gerontology, it can be difficult to find students with this type of background and students coming into their programs may be completely new to the field. In fact, only three universities (Mount Saint Vincent University, SFU, and California State University) specifically require the completion of some gerontology related coursework for entry into their master's programs.

⁵ This excludes the program at Queen's University as they have not accepted any students yet.

⁶ For programs that gave an estimated range instead of a number, the higher number of the range was used for the calculation. The University of Waterloo was excluded because their estimate combined master's and doctoral students together.

For master's programs, the majority of universities (15/20) identified their students as being a mix of professional students and undergraduate students. Two of the universities noted that their course-based master's option tends to attract a greater proportion of professionals, while the thesis-based option attracts more undergraduate students. The other 5/20 universities exclusively or primarily target professionals who desire specialized graduate level training, although only one (the University of British Columbia) has an official requirement of a specified amount of work experience. In the interviews, it was revealed that Georgia State University and San Francisco State University both offer free/cheap tuition for older adults and as a result this attracts some retirees to their programs.

Among doctoral programs, the target students tend to be those who seek an academic or research career. The University of Kentucky, University of Maryland, University of Massachusetts and University of Southern California do not require a master's degree for entry into their programs.

Gerontology Education Offered

Ten of the universities offer doctoral level gerontology programs. A total of 12 different programs are offered. The University of Waterloo offers two different gerontology-related PhDs, one of which is a collaboration between the School of Public Health and Health Systems and two other departments. The University of Southern California also offers two PhD programs, and their new PhD in Biology of Aging is a partnership between the School of Gerontology and the Buck Institute for Research on Aging. The PhD at the University of Maryland can be combined with a MS in Epidemiology or MA in Applied Sociology if desired. Purdue University partners with 17 other disciplines at the university and offers a dual-title PhD. The University of Massachusetts offers a concurrent master's degree that can be earned while in the process of earning a doctoral degree. Six of the doctoral degrees in the sample are titled PhD in Gerontology (or Dual-title PhD). The other doctoral degree titles are PhD in Social Gerontology; PhD in Aging and Health; PhD in Aging Studies; PhD in Biology of Aging; PhD in Aging, Health and Wellbeing; and PhD in Public Health and Health Systems.⁷

Twenty of the universities offer master's level programs (nine MA, nine MS, one MA or MS⁸, and one multiple different master's degrees). A total of 24 different programs are offered. The University of Southern California offers five different master's degree options (MS in Gerontology; MA in Gerontology; Master of Aging Services Management; Master of Long Term Care Administration; MS in Nutrition, Healthspan and Longevity) in recognition of the diversity of student interests and diverse needs of different sectors. Of the master's degrees offered by

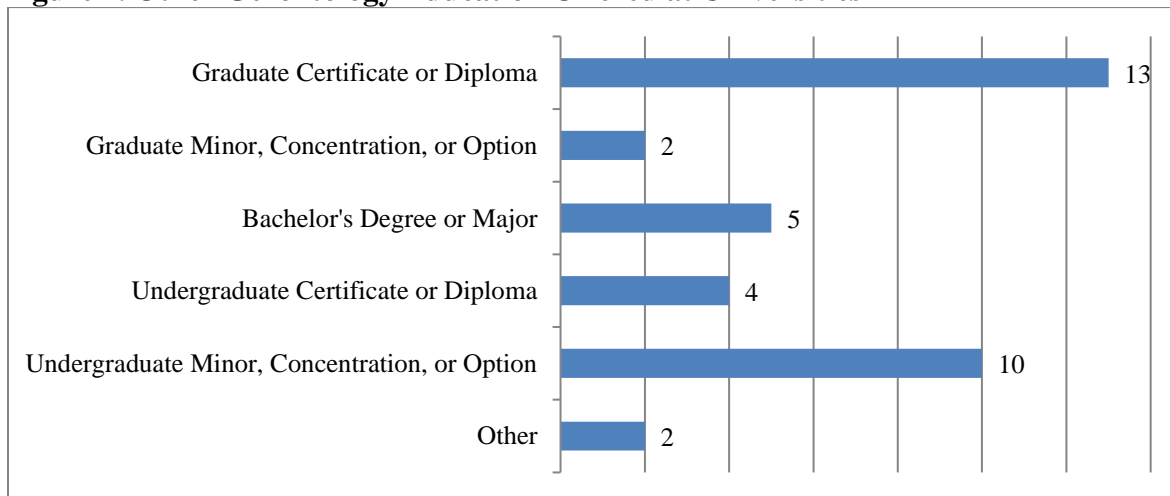
⁷ The PhD and MS in Public Health and Health Systems offered by the University of Waterloo were previously titled the PhD and MS in Health Studies and Gerontology. The name was changed this past year in order to increase alignment with the name of the School they are located in, but the content and focus of these degrees have not changed. The School is currently considering how to ensure the credentials they provide reflect the degree holder's expertise in aging.

⁸ The University of Regina offers a degree which can be either a MA or MS, however, as the requirements are the same for both it is only counted and referred to as one program in this report.

other universities, eleven are titled MA or MS in Gerontology degrees. Other master's degree titles include MA in Health and Aging; MA in Family Studies and Gerontology; MA of Health Leadership and Policy in Seniors Care; MS in Aging Studies; MS in Aging and Health; MS in Aging; MS in Gerontology Research/Policy, and MS in Public Health and Health Systems. Some universities also offer additional add-ons which can be earned in conjunction with a master's degree. At the University of Southern California, students may complete an advanced or progressive MS in Gerontology or dual MS-MBA, PharmD-MS, or MSW-MS. The University of North Carolina offers a regular MS in Gerontology degree and also a dual degree option combined with an MBA. At Minnesota State University students may complete the Nursing Home Administration Licensure program in conjunction with their degree. At the University of Missouri, students who complete a Program Administration concentration may also chose to complete a Certificate in Non-profit Management & Leadership. It was noted in the interviews that uptake of these add-on options tends to be low.

All but two universities have additional gerontology education available from their academic unit offering the doctoral/master's degree (i.e., graduate certificate or diploma; graduate minor, concentration, or option; bachelor's degree or major; undergraduate certificate or diploma; undergraduate minor, concentration, or option; other). The most common additional gerontology education offered are graduate certificates or diplomas and undergraduate minor, concentration or option (see figure 1 below). Appendix 4 provides a summary of the gerontology education offered by each university.

Figure 1. Other Gerontology Education Offered at Universities



Interdisciplinarity

In descriptions of the programs available on the university websites all of the universities describe their gerontology programs as interdisciplinary (or a variation of interdisciplinary: multidisciplinary, crossdisciplinary, transdisciplinary), commensurate with the development of the discipline.

The interdisciplinary nature of programs is demonstrated in a number of ways, such as: having an interdisciplinary faculty, partnerships between multiple disciplines to offer gerontology programs, offering dual degrees, a wide range of courses offered, a requirement/option of taking courses from other disciplines, and a wide range of student backgrounds.

Program Coursework

This section on program coursework is based on data obtained from university websites. Course information was obtained from course lists, academic calendars/bulletins, and course catalogues. Analysis of courses was conducted for each individual master's or doctoral program at a university. Courses were classified as required, optional, and electives.⁹ This summary focuses on required and optional coursework.

A total of 19 course subject areas were identified in which courses were coded into: fundamentals, biology, health, sociology, psychology, theory, research methods, programs, systems, policy, management, economics, business, ethics, diversity, death, environment, professional development, and applied health skills. A small number of courses were coded into two subject areas if they appeared to cover multiple areas, or were coded as other if they did not fit into any of the subject areas listed. Appendices 5 and 6 outline the required and optional courses for each program at the master's and doctoral level.

The total number of courses (required, optional, and electives) which must be completed for each program at the master's level ranges from 4-12 (see Appendix 2 for information on program requirements). Students completing a thesis generally complete fewer courses than those completing a course-based program. The programs at some universities are quite flexible with only 2-3 required or optional courses and electives as the rest of course requirements. At the master's level, four programs (all Canadian), have three or less required or optional courses, plus electives. Thirteen programs have a medium level of structure with 4-6 required or optional courses plus electives. Seven programs (six of which are American) have a high level of structure with seven or more required or optional courses and only a few elective choices.

At the master's level the most common type of course is research methods (including statistics courses), which is required or optional at all universities (19/24) except the University of British Columbia, Queen's University, and some programs at the University of Southern California¹⁰ (see Appendix 5). Some programs require completion of multiple courses related to research

⁹ Required courses are those that must be taken by all students completing the degree. Courses were categorized as optional if the student was given a choice within a specific set of parameters (e.g., complete 1/2 of the following courses, complete a concentration in health or the environment from a specific set of courses, complete this course if completing a thesis-based degree, complete a research methods course). Elective courses generally had no restrictions, except sometimes it was specified what academic unit they should be taken from.

¹⁰ Programs not requiring research methods tended to be more professional in nature.

methods, or offer additional courses on advanced research methods. Research methods courses tend to focus more on quantitative rather than qualitative methods.

Interestingly, the second most common type of course is a policy course, which is required or optional for 17/24 programs. Policy courses include general courses on aging and public policy, and also courses focusing on more specific aspects of policy (e.g., health policy, economic policy or social policy).

Courses related to health, sociology, and psychology are the next most common courses. The majority of the required or optional health courses (14/24) are general in nature, examining health in later life and health trends. The health courses often overlap with biology courses, with the main difference being that health courses take a broader perspective and are focused more on population-level trends. Biology courses are narrower in scope, focusing on physical changes and biological processes, and are less common (7/24). For the sociology courses (10/24), while the majority of required or optional courses are general courses on the sociology of aging, some universities offer courses specifically focusing on the family over the life course. While the required or optional psychology courses (10/24) tend to focus broadly on psychology and aging, a few are available on psychopathology.

Professional development courses/seminars are required or optional for 7/24 programs (6 of which are American). These courses cover a number of different topics including the latest gerontology research, gerontology careers, networking and job seeking advice, tips for new students, and research ethics, for instance. Some professional development courses provide students with assistance with fulfilling program requirements such as thesis and proposal writing or finding an internship.

Several universities offer required or optional courses focusing on applied skills in the areas of programs, management, and applied health skills. The courses on programs targeting older adults (7/24) focus on aspects of program delivery such as evaluation, development, and administration. Different aspects of management are covered in management courses (8/24) including management, administration, and leadership. The University of British Columbia, University of North Carolina, and University of Southern California have strong curriculum in the area of management. The new program at the University of British Columbia is designed to be a professional program, and at the University of North Carolina students may complete a concentration in non-profit management. At the University of Southern California two of the five degrees offered have strong management components (Master of Aging Services Management and Master of Long Term Care Administration). Courses in applied health skills (7/24) are offered by several universities and are targeted towards nurses, social workers, or other allied health professionals. Applied health skills also are commonly offered as elective courses. Courses cover a wide variety of skills, such as: geriatric assessment, counselling, psychotherapy, life review, case management, nursing practice, and social work.

While research methods emerged as a core component of gerontology education at the master's level, there appears to be less emphasis on theory. Only 4/19 universities offer required or optional theory courses, and only an additional 2 universities offer it as an elective. It should be noted that many courses in other areas (e.g., sociology, health, etc.) incorporate theory into the coursework, but theory appears to be an important gap at most universities.

Courses are also required or optional at eight universities on fundamentals (introductory course examining aging from a variety of perspectives); five on ethics (ethical issues associated with aging/working with older adults); five on systems (health, long-term or social care systems/services); four on economics; four on the environment (ranging from courses examining the built environment to those taking a broader ecological perspective); four on business; three on death (dying and end-of-life care); and two on diversity (e.g., ethnicity, gender, etc.).

At the doctoral level there is a wide range in the number of courses needing to be completed, ranging from 4-19 courses (see Appendix 3 for information on program requirements). Interestingly, five of the American doctoral programs require significant amounts of coursework to be completed which was somewhat unexpected at the doctoral level (University of Kentucky, University of Maryland, University of Massachusetts, and University of Southern California). Similar to the master's level, there is a mix in the level of structure of programs with some only having 2-3 required or optional courses and others having seven or more.

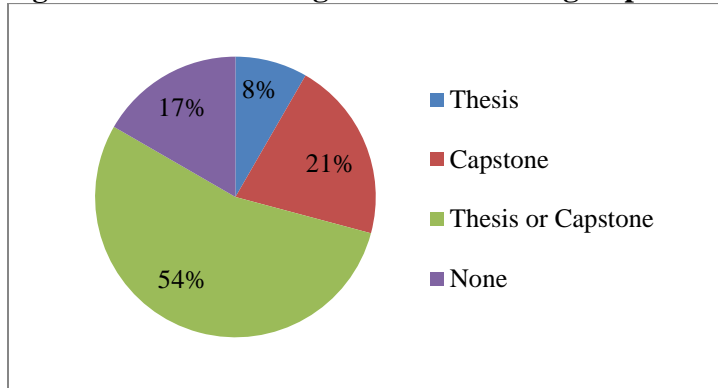
Research methods at the doctoral level are also the most common required or optional courses (9/12), and the majority of programs require completion of two or more research methods courses (see Appendix 6). The next most common required or optional courses are health (7/12), biology (6/12), psychology, (5/12), sociology (4/12), and policy (4/12). Theory courses are required or optional at 4/12 universities, suggesting more (but still limited) emphasis on theory at the doctoral level. Five of the programs require students to complete professional development courses/seminars (and it is worth noting three additional programs expect doctoral students to attend non-credit professional development seminars). One to two universities offer required or optional courses in the areas of: fundamentals, programs, systems, economics, diversity, ethics, environment and applied health skills. No universities offer required or optional courses on death, management or business.

Culminating Experience

Analysis of culminating experiences was also conducted for each individual master's or doctoral program at a university. For the master's programs, 54% of programs (13/24) offer both thesis and capstone options for completion (see figure 2 and Appendix 2). Two programs offer only a thesis option and five only a capstone. The University of British Columbia is a professional program and does not require a traditional culminating experience. Three of the programs at the University of Southern California (MA in Gerontology, Master of Aging Services Management, Master of Long Term Care Administration) also do not require a culminating experience. The University of Alberta also offers the option of completing a practicum as the culminating

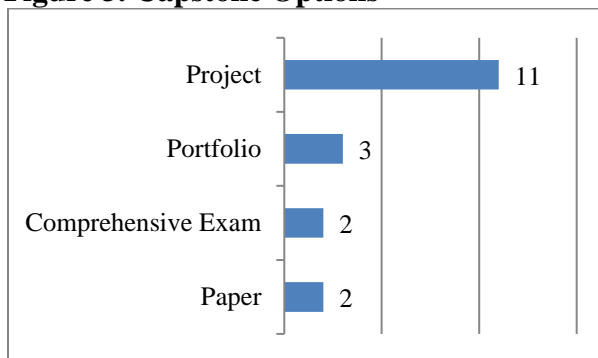
experience, in addition to capstone and thesis options. All doctoral programs require students to complete a comprehensive/qualifying exam and a thesis/dissertation (see Appendix 3).¹¹

Figure 2. Master’s Programs Culminating Experience Options



A wide variety of capstone options are available including a project, comprehensive exam, paper, or portfolio. The capstone options were described as not requiring original research and applied in nature. The project is the most common capstone option offered (see figure 3). Examples of capstone projects include a literature review, program evaluation, grant proposal, designing a new program, etc. Students are usually encouraged to complete an applied project based on their work/research interests. In several of the universities, the capstone project is completed during a capstone project course (Georgia State University, Mount Saint Vincent University, Queen’s University, San Francisco State University, University of La Verne, University of Massachusetts, University of Southern California¹²). At the University of Missouri the capstone project is completed as an applied project as part of the student’s second practicum. In other universities, the capstone project is completed over an extended period of time as a project outside of regular coursework.

Figure 3. Capstone Options



¹¹ For the Dual-title PhD at Purdue University and the PhD in Aging, Health and Wellbeing at the University of Waterloo students must complete the requirements of their home department.

¹² The MS in Gerontology program capstone is completed during a course, but not the MS in Nutrition, Healthspan and Longevity capstone.

Work Experience and Applied Learning

The opportunities for work experience and applied learning differ between doctoral and master's level programs. For the doctoral programs, the primary focus is on providing students with research experience. No doctoral program requires the completion of an internship or practicum, although the University of Massachusetts requires doctoral students to complete a research practicum course that fundamentally guides students through the process of writing an empirical research paper.

At the master's level, there is a stronger focus on work experience and an internship or practicum (see Appendix 2). Examining each individual master's program shows an internship or practicum is required by 9/24 programs (California State University, Minnesota State University, Northeastern Illinois University, San Francisco State University, SFU, University of Missouri, University of North Carolina, University of Southern California¹³) and an optional requirement for 6/24 programs (Georgia State University,¹⁴ University of Alberta, University of La Verne, University of Massachusetts, University of Northern Colorado, University of South Florida). Three universities actually require students to complete more than one internship or practicum (Northeastern Illinois University, University of Missouri, University of North Carolina). Several universities mentioned that they have an internship advisor who helps students to select an internship or practicum site and monitors the internship or practicum. Internship or practicum are chosen either through a list of approved sites or based on the student's interests. Interestingly, 6/9 of the programs which do not have a required or optional internship or practicum are at Canadian universities (the other programs are all at the University of Southern California). Representatives from three of these universities stated that the reason they do not offer internships or practicum or a focus on work experience is because the majority of their students are professionals who already have a career in the field.

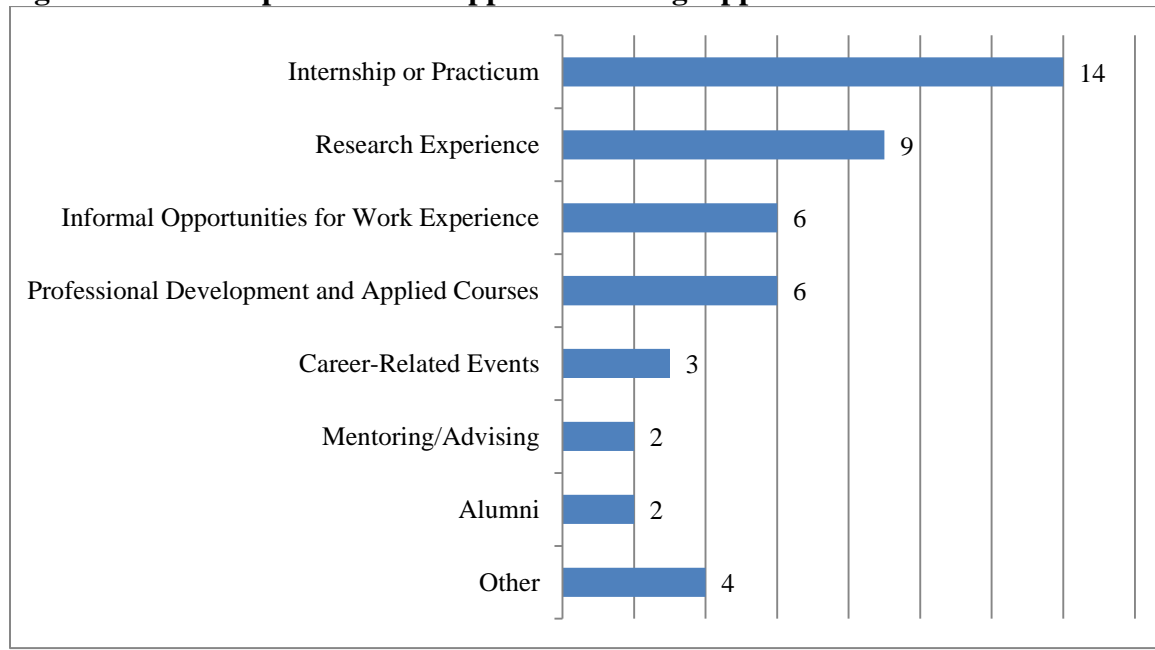
Overall, the most prevalent opportunity for work experience or applied learning offered by universities in the sample is a required or optional internship or practicum (14/23 universities) (see figure 4). The next most common type of work experience or applied learning is research experience opportunities, and this was reported by 9/23 universities and 7/10 of the universities offering doctoral programs. Research experience opportunities included opportunities to work on research projects (most commonly as a research assistant) and also opportunities to gain experience through the student's own dissertation/thesis research. Informally arranged opportunities for work experience and networking through the program or faculty were identified by 6/23 universities. Professional development and applied courses were also reported by 6/23 universities. Career-related events, career mentoring/advising, and interaction with alumni were also raised as relevant opportunities to develop professional networks by a small number of

¹³ Required for the MS in Gerontology and the MS in Nutrition, Healthspan and Longevity.

¹⁴ Required for capstone students, but optional for thesis students.

universities. Other forms of work experience that were identified were teaching opportunities, opportunities for academic experiences, student clubs, and applied thesis research.

Figure 4. Work Experience and Applied Learning Opportunities

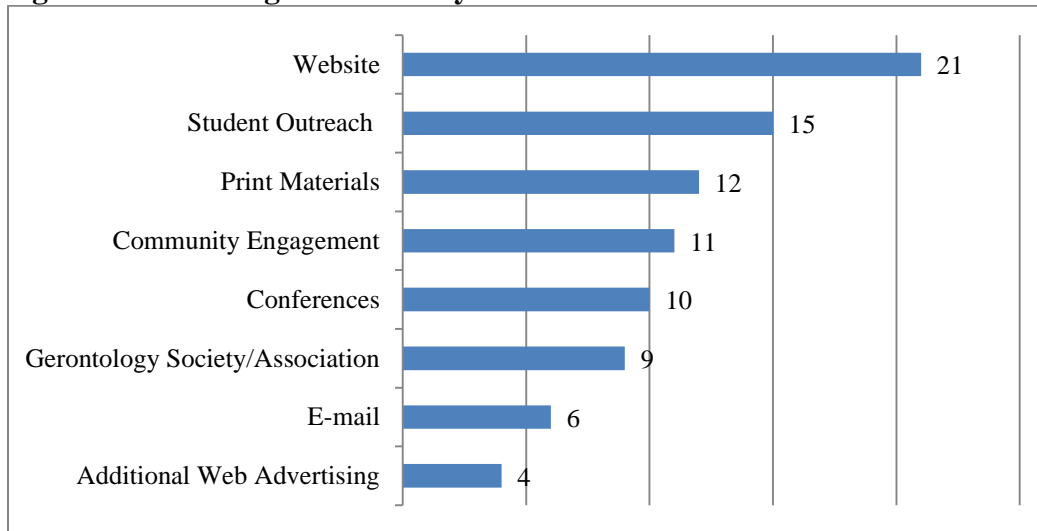


Marketing and Publicity Methods

The most popular marketing and publicity method used by the universities in our sample was advertising through their website. Websites were mentioned specifically by 21/23 universities, though it should be noted that all of the universities in the sample have a website with information available about their gerontology program. Websites were identified by several of the universities as their most important method of advertising.

Additional marketing methods in order of popularity were: student outreach, print materials, community engagement, conferences, gerontological societies or associations, e-mails, and additional web advertising. There is some overlap between these methods, as for example, a university may mail out print materials as a part of student outreach activities (see figure 5). One university commented on the differences between marketing for doctoral programs and master's programs, stating that doctoral programs rely more on word of mouth and informal methods, while the master's programs utilize more targeted methods.

Figure 5. Marketing and Publicity Methods



Fifteen of the universities reported engaging in student outreach strategies such as Careers in Aging Week events, open houses, advertising/mail outs to undergraduate programs, etc. Print materials (most often brochures) were mentioned by twelve universities, with these materials often being mailed out to students/undergraduate programs or made available at outreach events. Eleven universities use community engagement with local aging networks and organizations, alumni, general public, etc. as a marketing method, with a few indicating this was their primary method of marketing. The reputation of faculty and having a high level of faculty engagement were clearly the primary strategies of community engagement. Examples of community engagement activities include: attending or holding community events, offering educational opportunities and lectures to the public, sponsoring/co-sponsoring programs, marketing to community organizations, and community networking. Ten of the universities advertise at gerontology-related conferences such as through a booth or distribution of printed materials. Nine universities promote their programs through gerontology societies or associations (Canadian Association on Gerontology, AGHE, Gerontological Society of America, and Southern Gerontological Society were specifically mentioned). Having a booth at conferences was the most commonly mentioned way to advertise through these organizations, but some universities also mentioned advertising in publications, e-mail lists, and through their presence as a member of the society/association. Six of the universities listed e-mails sent out to alumni, professional associations (e.g., American Psychological Association), AGHE mailing lists, etc. as a method of advertising. Besides their own website, four of the universities specifically mentioned additional web advertising activities such as social media, advertisements on other websites, and gradschoolmatch.com. A small number of these universities stated that they use a marketing specialist/company to manage their web advertising activities.

Tuition and Funding

The cost of enrollment in a gerontology program ranges from as low as approximately \$1,500 per semester to as high as approximately \$24,000. For international students (or in the case of American universities out of state residents) tuition costs are normally 2-3 times that of a regular student. The cost of education at an American university is notably more expensive than at a Canadian university, with tuition of approximately \$3,500 per semester being at the high end of the Canadian spectrum and the low end of the American spectrum.¹⁵

A variety of funding opportunities are available for students, with all of the universities identifying some available funding. All of the universities with doctoral programs offer funding to doctoral students, commonly as a guaranteed funding package or graduate assistantship. At the master's level there tends to be less funding available than at the doctoral level.

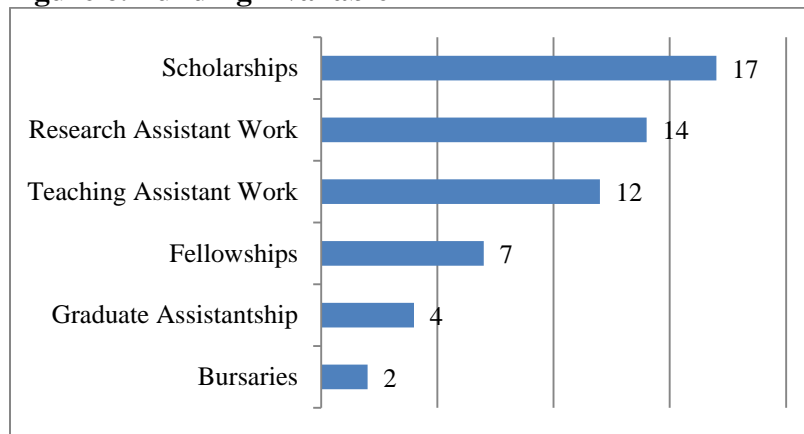
Overall, scholarships are the most common form of funding available, reported by 17/23 universities (see figure 6). Some universities only have a few scholarships available, while others are able to provide ten or more students with scholarships each year. The value of the scholarships range from a few hundred dollars to several thousand dollars. Fellowships are also available at 7/23 universities, and are primarily available to doctoral students. Bursaries are less common and were only mentioned as being available by two universities.

Students also are able to receive funding through work as research assistants (14/23), teaching assistants (12/23), or graduate assistants (4/23).¹⁶ Amount of research assistant work varies by university, ranging from only having a few positions available to having enough research assistant work to provide positions for most or all of their students. Research assistant positions are highly dependent on the success of faculty in receiving grants. Teaching assistant positions appear to be in more limited supply, with funding for these primarily through the academic unit/university. It was mentioned by some participants that students who are working as research assistants, teaching assistants, or graduate assistants receive tuition waivers, health care benefits, and/or other benefits on top of their pay.

¹⁵ The program at the University of British Columbia was an outlier in Canada as it is a professional one year degree with tuition of approximately \$9,000 per semester.

¹⁶ Graduate assistantships overlap with research assistant and teaching assistant work as students with graduate assistantships may be paid to assist with research, teaching, or other activities in the academic unit

Figure 6. Funding Available



When asked about external funding a total of 16 universities indicated that some of their graduate students had received external funding (e.g., scholarships or fellowships from external funders such as government agencies). The amount of students estimated to receive external funding was between 0-50%, with doctoral students estimated to have higher rates of external funding than master's students.¹⁷

Alumni

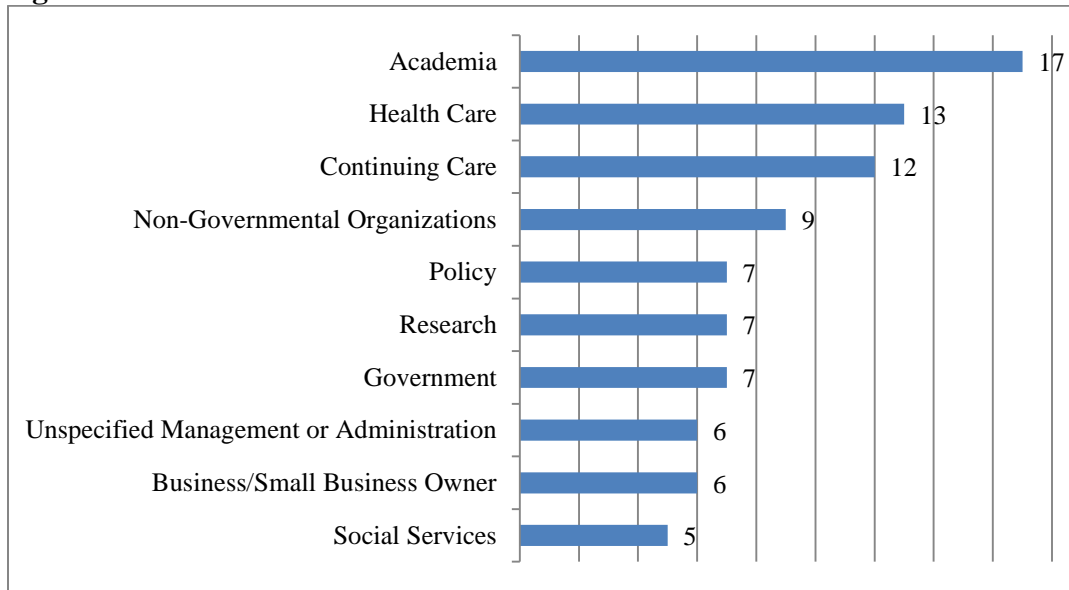
It was stated that alumni have high success rates in finding jobs and work in a wide variety of fields.¹⁸ Twelve of the universities estimated job placement rates for alumni in aging-related careers as between 75-100%. Job placement estimates were based on information such as surveys of alumni, program tracking and follow-up of alumni, and faculty experience with students. The eleven other universities did not have the information available to make an estimate, though some did state that students have high success rates in finding jobs after school.

The most commonly reported field of work for students was academia (17/21), which in the case of master's programs usually referred to students pursuing a PhD, and at the doctoral level referred to attaining a position at an educational institution (see figure 7). Careers in academia, unsurprisingly, were mentioned by all of the universities offering doctoral degrees.

¹⁷ There was some confusion over the meaning of the term 'external funding' particularly among American Universities as it seems the term is not commonly used in the U.S. This may have impacted some of the responses to the question

¹⁸ Queen's University and the University of British Columbia did not comment on the alumni questions as their programs have just started over the past year.

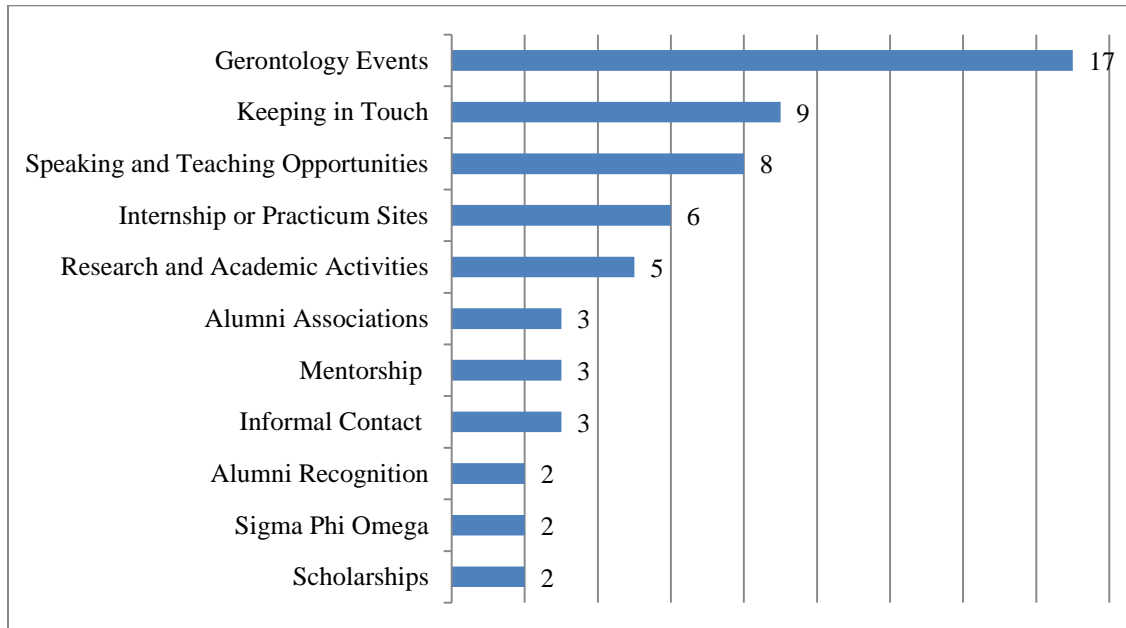
Figure 7. Alumni Jobs



Jobs in health care were mentioned the next most frequently (13/21) and included jobs in both management and practice, including allied health professions. Jobs in continuing care settings (retirement community, long-term care, assisted living, etc.) were stated by 12/21 universities. Long-term care administration was the most commonly cited career in continuing care. Jobs in non-governmental organizations were mentioned by 9/21 universities and included jobs with non-profit organizations, advocacy groups, and community organizations. Jobs were also identified in the areas of policy, research, government, business (including small business owner), and social services. In addition, in six interviews the response of unspecified management or administration roles were given.

Level of interaction with alumni by the universities is in most cases low to moderate, with alumni interaction commented on by several universities (7/21) as an area that they wish to improve or are working on improving. In many cases, interaction with alumni is informal and not the result of targeted alumni outreach strategies. However, it was suggested that targeted outreach strategies may be needed as programs grow in size. One university commented that there tends to be stronger ties with doctoral alumni than master's alumni. Figure 8 lists the common forms of alumni interaction mentioned by universities.

Figure 8. Alumni Interaction



The most common form of interaction with alumni (17/21) is inviting them to attend gerontology events (e.g., graduations, lectures, special events). Generally these events are open to the whole gerontology community, though there was one example at California State University where an annual brunch is held specifically for alumni. The next most common form of interaction is activities to keep in touch with alumni (9/21). The universities keep in touch with alumni by activities such as maintaining alumni databases, sending out e-mail information, sending birthday/holiday greetings, and through newsletters. It was also mentioned that alumni are invited to fill speaking and teaching roles (8/21), for example as guest lecturers, presenters, and instructors. Alumni were identified as an important resource for finding internship or practicum placements for current students (6/21). Five universities reported interacting with alumni through research projects or other academic activities (e.g., task forces, university advisory committee). Three universities identified alumni associations (one had an alumni association, one previously had one, and one was in the process of forming one). The need for a faculty member to take a leadership role in running these groups was emphasized by two of the universities. Alumni mentorship programs had been/were being developed by three universities. Informal contact between the faculty and alumni was mentioned as an important facilitator by three universities. Activities to recognize alumni, Sigma Phi Omega (the Gerontology Honor Society), and alumni contributions to scholarships were each mentioned by two universities. Other forms of alumni interaction included: private LinkedIn page for alumni, offering a course to alumni, news stories on the department website, and having an alumni outreach officer.

Academic Auxiliaries

A total of 14/23 universities reported that they have a gerontology-related research centre/institute present at their university. A total of 7/8 of the Canadian universities have a

research centre/institute present. The gerontology programs at Georgia State University, Purdue University, the University of Kentucky and the University of Regina are all actually coordinated by a centre/institute on campus.¹⁹ Ten other universities (McMaster University, Minnesota State University, Mount Saint Vincent University, SFU, University of Alberta,²⁰ University of Maryland, University of Massachusetts, University of South Florida, University of Waterloo,²¹ University of Southern California) reported having one or more gerontology-related research centre/institute on campus. The most well-known of these research centres is the Ethel Percy Andrus Gerontology Center at the University of Southern California, which is separate from the School of Gerontology but for branding purposes are often presented as a single entity. Research centres/institutes support gerontology programs through research, providing opportunities for students (e.g., work, mentoring, space, scholarships, support), community engagement and outreach, and sharing resources and personnel.

Of the nine universities without research centres/institutes present, three stated that there have been centres/institutes on campus in the past and two mentioned that they have a network of aging researchers established on campus.

Program Strengths and Innovations

Based on the interviews, a broad range of program strengths/innovations were identified by participants. Many of the strengths identified related to the interdisciplinarity, versatility, and range of program experiences.

Program identity and pedagogical approach was identified as a key strength/innovation by 11/23 universities. In one interview, the participant commented on the importance of programs having a clear identity and filling a specific role. Examples of program identities given include: social gerontology, long-term care administration, applied health, combined health and business, and community-based. As would be expected, the program identity was linked with the pedagogical approach of the program.

The interdisciplinary or multidisciplinary nature of the education offered was a key strength/innovation identified by 9/23 universities. Faculty and instructors were identified as coming from a wide variety of disciplinary backgrounds. Programs may offer dual-degrees, be

¹⁹ The University of Kentucky also has an additional centre, the Sanders-Brown Center on Aging which houses the federally-funded Alzheimer's Disease Research Center.

²⁰ The activities of the Alberta Centre on Aging have been temporarily suspended as the centre is in the process of reassessing themselves. Previously this centre has played a role in developing and coordinating aging curriculum and programs for the three academic units which offer aging education (human ecology, nursing, and rehabilitation).

²¹ The Schlegel-UW Research Institute for Aging is an independent research institute but linked to the University of Waterloo as some faculty hold research chairs from the institute and there is interaction between the institute and programs.

collaborations between multiple disciplines, or involve a wide range of affiliated faculty. For example, the University of Maryland offers a doctoral program based on a collaboration between a traditional academic campus and a professional schools campus (e.g., law, medicine, nursing etc.) and their program attracts a wide range of students and also has a broad range of faculty expertise on which to draw.

The opportunity for students to obtain a wide range of educational experiences was identified as a key strength/innovation among 10/23 universities. These programs offer a variety of opportunities for course selection, thesis projects, internships or practicum, etc. There are also opportunities for learning to take place in different settings (e.g., classroom, online, workplace). The University of Southern California exemplifies this strength, offering five different master's degrees (although many students select online versions) in the recognition of the diverse needs of different sectors and the fact every business can benefit from gerontology. Related to the ability to provide a broad range of educational experiences is the ability to provide a balance of academic and applied skills/experience, which was identified as a strength/innovation by 5/23 universities. Specific educational experiences were also highlighted by some programs as strengths/innovations. Three universities identified opportunities in courses to develop applied skills as a strength/innovation. For example, Minnesota State University provides courses required for state licensure for nursing homes. Two universities identified their work experience opportunities as a strength/innovation and two universities identified research experience.

Other strengths/innovations identified included: mix of students, strong connections with the community, individualized attention, longevity of programs, and focus on diversity and social issues. Five universities identified their mix of students (different disciplines, mature, professional, retired, etc.) as a strength, with students having a variety of different experiences and benefiting from being able to interact with and learn from each other. Programs having strong connections with the gerontology community was identified by five universities as a positive attribute, and was viewed as important for applied learning, work/research opportunities and networking. Four universities identified offering individualized attention (e.g., tailoring programs, one-on-one contact) as a strength of their program. This point was identified by both larger and smaller programs. The longevity of their programs was identified as a strength by three universities. For example, the MA program at the University of South Florida has been in existence for over 50 years. Two programs identified their focus on social issues and diversity in their curriculum as a forte. Two programs identified the quality of their faculty as a key strength. Other factors identified related to space/location, quality of student education, faculty funding, and faculty engagement of undergraduate students.

5. Discussion, Conclusion & Recommendations

Discussion of Findings

Based on the results of this research, it is evident that gerontology graduate education programs are diverse, with a variety of structures and offering a wide range of educational experiences. Some commonalities did emerge in gerontology graduate education, including: emphasis on providing interdisciplinary education; offering of internship or practicum at the master's level; movement towards course-based programs at the master's level; and research, policy, health (including physiology, biology, etc.), sociology, and psychology courses as the core foundations of gerontology education.

Gerontology graduate programs are offered by a mix of schools, departments, and programs/research centres. Previously, Haley and Zelinski (2007) noted that gerontology schools or departments may have advantages over other types of gerontology programs, as they are able to control resources and maintain faculty which allows for greater program sustainability. Programs without the support of a gerontology school or department, on the other hand, are more likely to experience instability in the forms of budget cuts, changes in faculty, and changes in focus of academic units (Haley & Zelinski, 2007). Based on our research, it was observed that while some programs offered by schools/departments appear to be larger and better developed, there are several examples of successful programs which do not have the support of a gerontology school or department. The interdisciplinary nature of gerontology may be a contributing factor as to why some gerontology programs can thrive without the support of a gerontology school or department. Further research would be required in order to determine if there is a difference between the success of gerontology programs offered by gerontology schools or departments versus those offered without this support. In terms of sustainability, a long-term or historical analysis would be required in order to determine the impact of structure of academic unit on sustainability.

Gerontology graduate programs attract a very diverse group of students, including traditional academic students, professionals, and mature/retired students. Students also come from a wide range of undergraduate backgrounds. While having a diverse group of students can help enrich the educational experiences programs offer, it also can present challenges. Students may have very different educational needs and expectations of what they want to get out of their graduate education. At the master's level some programs have been designed to specifically attract and cater to working professionals. In order to accommodate working professionals these programs offer courses on the evenings/weekends, part-time, or online. The development of one year course-based master's programs has also been another innovation aimed at working professionals.

Almost all of the universities offering gerontology graduate degrees also offer some other forms of gerontology education. The fact that graduate certificate or diploma programs are the most common type of other education offered is likely indicative of the synergistic relationships that exist between graduate degree programs and graduate certificate or diploma programs. Generally graduate degree programs and graduate certificate or diploma programs based out of the same academic unit share resources and faculty, and courses are cross-listed for both types of programs. Graduate certificate or diploma programs can also act as a stepping stone to the master's program. The graduate certificate or diploma programs appear to be targeted towards working professionals, being shorter-term and often offering online education options. With the advancement of course-based master's degrees in gerontology education, which also often seek to target working professionals, there appears to be a growing overlap between these two types of programs. Which educational option will best meet the needs of professionals is a question that should be asked by gerontology programs.

AGHE (2014) recommends that gerontology programs provide education that satisfies ten core competency areas (Frameworks for Understanding Human Aging, Biological Aspects of Aging, Psychological Aspects of Aging, Social Aspects of Aging, Humanities and Aging, Research and Critical Thinking, Attitudes and Perspectives, Ethics and Professional Standards, Communication With and On Behalf of Older Persons, and Interdisciplinary and Community Collaborations) and at least two of eight selective competencies (Well-being, Health and Mental Health; Social Health; Programs/Service Development; Education; Arts and Humanities; Business & Finance; Policy; and Research, Application and Evaluation). As can be seen in Appendices 5 and 6, programs appear to vary in the extent they fulfill these competencies.

Research methods, policy, health, sociology, and psychology courses appear to form the core foundation of gerontology graduate programs at both the master's and doctoral levels. Alkema and Alley (2006) note that traditionally sociology, biology, and psychology have formed the foundations for gerontology education. The abundance of courses in these areas reflects the disciplinary foundations of gerontology programs. While courses on health take broader approaches in examining health, illness, and disease in later life than biology courses, they share similar roots and there tends to be overlap. The current predominance of health courses over biology courses perhaps is indicative of the interdisciplinary nature of gerontology education which encourages the incorporation of multiple perspectives. While policy courses are considered an elective and not a core competency by AGHE, given the high number of programs requiring policy courses, it is apparent that policy is a cornerstone for most gerontology graduate programs. This is appropriate given the fact that older adults are highly dependent on the policies of the state due to retirement schemes (Estes & Wallace, 2010). Kim and Peterson (1999) surveyed alumni of the gerontology programs at the University of Southern California and found that over 90% of alumni rated courses in the core areas of psychology, sociology, biology and policy as 'very useful' or 'somewhat useful' compared to 'not useful.'

Some important differences were observed between the coursework required at the master's versus doctoral level. At the doctoral level, there is a greater emphasis on research methods and, to a lesser extent theory, as would be expected in a program designed to prepare individuals to work primarily in academic and research settings. On the other hand, at the master's level programs appear to be more geared towards providing foundational skills necessary for management and service-based jobs in government, administration, health care, social services, etc. These programs often have required or optional courses in the areas of programs (e.g., program development, evaluation, administration), management (e.g., management, leadership, administration), business (e.g., marketing, small businesses), applied health skills (e.g., counseling, social work), and systems (e.g., health care system, social services). Previously, Haley and Zelinski (2007) recommended that master's programs seek to provide students with more applied skillsets. Similarly, Molinari and Ellis (2014) surveyed graduates of the master's program at the University of South Florida and found a demand for more applied training. It appears that master's programs are beginning to adapt to these changing needs.

Notably missing from the curriculum of most programs is a course on theory (particularly at the master's level). Alkema and Alley (2007) note that theory is one of the four key elements that must be present for gerontology be considered a unique field of inquiry, and while gerontology does not have one grand theory, gerontology theories do share a common perspective on aging based on continuity and change over time. If gerontology is truly developing into a field of its own, then it seems appropriate that courses on theory be developed. Historically gerontology has been largely atheoretical in nature, although research suggests that the use of theory is slowly gaining ground in gerontology (Alley, Putney, Rice & Bengston, 2010; Hendricks, Applebaum, & Kunkel, 2010). While research and work in gerontology often focuses on attempting to solve problems older adults are facing, theory has the potential of allowing us to move beyond our current approach of continuously finding individual solutions and starting over again for each new problem (Hendricks et al., 2010). It also provides a deeper conceptual understanding of the context in which behaviours occur.

The sample for this report did not include any fully online degrees since it was felt that a separate inquiry would be more appropriate for studying online degrees. It is worth noting though that based on information available on their websites at least six of the universities in our sample offer some online course options for their master's or doctoral degrees (Minnesota State University, Mount Saint Vincent University, Queen's University, University of Massachusetts, University of Northern Colorado, University of South Florida). At the University of Southern California all five master's degrees can be taken on-campus or online. Both the doctoral and master's programs at Queen's University can be completed primarily online, but with some on-campus requirements. In the interviews, it was commented that at Minnesota State University, they likely have enough online resources available that they could put together a fully online master's degree, but they have avoided doing this because of the importance of in-person interactions for their long-term care courses. The University of Massachusetts actually offers a

fully online MS in Management of Aging Services degree which was not included in the sample. Henke (2000) notes that a number of factors should be considered before a gerontology program goes online, but the low investment and operating costs can make online education an attractive option. Of course there often are debates about the value, quality and experience that can be offered by completely online education, and this is an area that would benefit from further research being conducted.

The culminating experiences supported by doctoral programs appear to be quite uniform with little change over time (dissertation/thesis and comprehensive/qualifying exam), whereas at the master's level, gerontology education appears to be moving away from the traditional thesis-based degree and embracing the capstone as the preferred culminating option. The majority of master's programs offer both a thesis and capstone option, but the capstone appears to be the more popular option at most universities based on anecdotal evidence. Some of the universities commented that the capstone was a recent introduction over the past decade in an attempt to meet changing student needs. Several of the universities which offer both a thesis and capstone option also commented that the capstone is the more popular option.

Our analysis found the internship or practicum to be a key component of gerontology master's programs, with internship or practicum experiences offered by 63% of programs. Karasik (2009) notes that gerontology internships can have benefits for students, community partners, and academic programs. Internships provide students with opportunities for hands-on experience, mentoring, career exploration, professional development, networking, and potential job opportunities. The community partners that host interns are provided with an individual to help with day-to-day tasks or special projects (and it should be noted that this help is usually unpaid). Finally, for academic programs internships enrich programs and help to foster positive relationships with the community. Previous research by Haber (2003) has found practicum experiences (practicum, field placement, or internship) to be a ubiquitous component of gerontology education. Haber (2003) surveyed 112 institutions in the U.S. offering gerontology degrees (master's or bachelor's) or certificates, and collected data on a total of 158 gerontology programs. Haber (2003) found 87% of programs offered their students a practicum and 78% of programs required completion of a practicum. The somewhat lower percentage of master's programs offering internships or practicum in our sample appears to be the result of the inclusion of Canadian universities. Haber (2003) collected detailed information on practicum and found that they most commonly are offered as a one semester practicum experience (89%) and the mean number of required hours is 175 (range of 30-800 hours). The majority of programs require students to complete a journal on their practicum experience (85%) and a paper assignment (78%). Over half of programs also require some classroom hours related to the practicum where students can share their experiences and discuss their practicum (Haber, 2003).

In addition to internships or practicum most programs are able to offer other opportunities for work experience and applied learning. Research assistant work emerged as an important source of funding for students, and also an opportunity for work experience. The University of

Waterloo, for instance, is able to offer students a unique arrangement where students can obtain research positions with organizational partners, which may be more useful for students not intending to embark on a career in research or academia. Professional development courses are another opportunity for students to gain the skills required to succeed after school. A total of 8/12 doctoral programs require students to complete a credit or non-credit professional development course, and 7/24 master's programs require a professional development course.

One of the most salient innovations in gerontology graduate education observed is the integration of gerontological training with opportunities provided by community/organizational partners, research affiliates, and alumni to foster more direct learning experiences in research, policy and practice. In the current era of budgets cuts and economic scarcity, partnerships and strategic relationships have become the logical way forward for both educational and economic reasons.

Strong connections with the community was one of the key strengths of gerontology graduate programs mentioned by several participants. Community engagement plays a key role in offering opportunities for work experience and applied learning to students. Community connections are also a part of the marketing and publicity strategies of some programs, but is heavily dependent on the efforts and reputation of the faculty.

Over half of the universities have a gerontology-related research centre/institute present. Research centres/institutes provide gerontology graduate programs with opportunities for resource sharing, mentoring, employment, etc. They may also play an important role in coordinating gerontology education programs which do not have a home department. While some research centres/institutes are well funded and have a long history on campus, others are transient in nature and sometimes rely on unstable sources of funding. It is therefore important to be cautious about relying too heavily on the latter type.

As the majority of gerontology graduate programs have passed their initial development phase, alumni are now a valuable resource that is available to gerontology graduate programs. Strong relationships with alumni can positively benefit gerontology graduate programs through opportunities for mentoring current students, teaching and guest lectures, networking, building the reputation of the program, and providing internship or practicum placement sites for current students. The University of Missouri, for example, estimates that 25% of practicum placements are with alumni and this number is increasing through concentrated efforts to reach out to alumni. It appears though that few gerontology graduate programs are fully capitalizing on the potential benefits of alumni involvement. The majority of interactions with alumni are casual and untargeted. Developing alumni strategies and approaching alumni outreach in a more systematic manner may provide programs with a wealth of new opportunities.

Based on estimates of successful job placements and anecdotal evidence, it appears that gerontology alumni are very successful in finding jobs after school. This information should be

treated with some caution since the question about job placement rates did not specify the time period within which jobs were found, and rates were primarily estimates. In addition, a portion of students are working professionals so would already have a job when entering the programs. Previous research by Molinari and Ellis (2014) has found that 68% of graduates find aging-related jobs shortly after graduation, a slightly lower rate than the estimates given in this project. In their survey the two most common suggestions for improvement for the programs at the University of South Florida were offering more clinical/applied experiences and more career planning. Also, a common concern for students was that people outside of the field do not understand what gerontology is (Molinari & Ellis, 2014). Though still a significant matter of debate, licensure has been suggested as a way to assist students in competing in the current job market and a necessary development for gerontology programs (Molinari & Ellis, 2014; Haley & Zelinski, 2007)

From this research it also became apparent that there are some important differences between gerontology graduate education in Canada versus the U.S. In the U.S. we see there has been a much greater shift towards applied education than in Canada. This is most noticeably demonstrated by the fact that only two universities in Canada offer an internship or practicum. Canadian programs also are smaller in size which is to be expected given the smaller population of the country. The cost of tuition is also significantly less in Canada than the U.S. The fact that Canadian programs tend to require a smaller number of courses and have less structure than their America counterparts was an interesting finding.

How Do the Gerontology Programs at SFU Compare?

SFU is one of the universities included in the sample for this project. The Gerontology Program was established in 1983, and in 2004 received full departmental status. The Department currently offers a comprehensive range of education options including a Post-baccalaureate Diploma in Gerontology (since 1983), a MA in Gerontology (since 1996), an undergraduate minor in gerontology (since 1999) and a PhD in Gerontology (since 2008). SFU is one of only seven universities in our sample which offers both doctoral and master's programs. The programs at SFU attract a mix of traditional academic students and also professionals. In terms of size, the programs appear to be mid-sized, with approximately 20-22 students.

Program Requirements

The gerontology graduate programs at SFU require the completion of 5-7 courses, which is in the low to mid-range in this sample (but in line with other Canadian universities). The programs have a low level of structure, with students able to select the majority of their courses based on their areas of interest. Courses are required or optional in the areas of health, sociology, psychology, research methods, programs, policy, environment, and other (plus theory at the doctoral level). While these courses provide students with a strong foundation in gerontology, given that many alumni appear to be working in areas such as health care, long-term care, and

non-governmental organizations, offering courses which will increase the students' applied skillsets may be beneficial (e.g., business, management, applied skills, etc.). Furthermore, a professional development course may also be useful for students.

Similar to the majority of other universities, students at the master's level have the option of completing either a thesis or capstone as their culminating experience. The capstone project is completed outside of regular coursework and may take several semesters to complete. An alternative option which some universities have adopted is to have students complete their capstone project through a one semester capstone course. At the doctoral level students complete comprehensive exams and a dissertation, which was found to be the same at all universities offering doctoral education.

SFU is the only Canadian university in the sample which requires the completion of an internship at the master's level. The internship is a cornerstone in gerontology education (particularly in the U.S.) and could be further developed into an important selling point for the program in the Canadian market. To aid students in finding an internship site some universities have an internship coordinator (usually a faculty member) who oversees the internship process. An accompanying internship course may also be offered where students have the opportunity to share experiences with other students, receive advice, and learn more about careers and professional development.

Leveraging Available Resources

SFU is fortunate to have additional resources available through community/organizational partners, research affiliates, and alumni. The Department of Gerontology has been a part of the gerontology community in British Columbia for over 30 years. Through the activities of the faculty and the Gerontology Research Centre, strong connections have been formed with the community. The Department also has a reputation for producing quality students who are well respected within the community. There are many opportunities for community and organizational partnerships to be used to provide students with applied learning experiences. These could range from opportunities for applied and experiential learning in courses to internship or practicum placements to applied research projects. Furthermore, SFU also currently has two major gerontology-related research centres/institutes present, the Gerontology Research Centre and the newly formed AGE-WELL Network Centre of Excellence (NCE). Both centres also can play a role in providing work experience, research experience, and applied learning experiences for students.

The long history of the gerontology programs at SFU means that the Department has been able to build up a considerable alumni network. While the Department attempts to track and stay in touch with all alumni, future efforts should be intensified to make more use of this valuable resource. Additional strategies could be developed to foster more connections between alumni

and current students through special events, alumni mentoring programs, placements of interns with alumni, and presentations/lectures by alumni.

Canadian Comparisons

SFU appears to be the Canadian university with the most concentrated focus on gerontology. Of the seven other universities offering gerontology graduate education in Canada, four emphasize health, one human ecology, one families and gerontology, and one is interdisciplinary.

The landscape of gerontology education in Canada has been changing rapidly, as new programs have recently been introduced at the University of British Columbia and Queen's University which appear to be primarily aimed at health professionals, and also a new doctoral program at McMaster University. Given the increased competition in the gerontology field at the graduate level in Canada, marketing and publicity strategies will be increasingly important in the future. SFU makes use of multiple marketing and publicity methods, including: the department website, outreach to minor and Post-baccalaureate Diploma students, brochures, targeted mail-outs to related programs, outreach by faculty and the Gerontology Research Centre, and annual booths at SFU program promotional days. The Department is somewhat advantaged in the competition to attract students by offering undergraduate gerontology programs which provide opportunities for outreach to undergraduate students. It should be noted, however, that SFU is one of only three universities in the sample that requires the completion of courses in gerontology prior to admission at the master's level. Given the lack of undergraduate gerontology education options available, this requirement may act as a barrier to some students, though on the other hand having this requirement may improve the quality of students entering the program, and allow for higher level gerontological training.

The Department of Gerontology has significant funding opportunities available for students at the master's level compared to other universities. There also have been high success rates in students securing external funding. However, similar to some other universities, the Department does not offer doctoral students specific funding packages upon entry. This may be a weakness as more doctoral programs enter the field in Canada.

Limitations

There are some limitations of this study which should be mentioned when considering the findings and their implications. First, the sample included 23/40 potential eligible universities. While the sample appears to include a broad range of gerontology graduate programs, there is the potential that there may have been self-selection bias. Furthermore, it is possible that there were some eligible universities which were missed in our searches and therefore were eligible but were not included in our pool of eligible universities. In particular, this may have applied to our pool of eligible American universities, as the authors are less familiar with the gerontology community in the U.S. We also did not include fully online degrees as we felt that a separate

inquiry would be necessary to understand the trends and challenges of online education. We were unable to include in our sample universities which conduct their education in French.

Second, since we wished to keep the time commitment for participating in our project reasonable, we limited the number of our interview questions. There were also some areas in which more in-depth and detailed research would be beneficial. Thus, this research has identified several areas for potential future research.

Third, some of the data used for this research were collected from university websites. It is possible that some of this information may be incorrect, out of date, or incorrectly interpreted by the authors.

Fourth, there was some confusion over the term 'external funding' which was used in one of the questions. This appears to be a term more commonly used in the Canadian context, and this may have cause some of the participants to misinterpret the question.

Conclusion

The field of gerontology has undergone significant changes since its original breakout in the 1970s and 1980s. Gerontology has developed into a mature field with a number of established gerontology graduate programs in both Canada and the U.S. With the aging of the baby boomers gerontological expertise is needed now more than ever. Yet while there has been development in the field, there has also been retrenchment. The current economic climate and fiscal austerity has made it difficult for some gerontology programs to survive. Gerontology graduates still do not receive a recognized credential upon graduation and the job market is increasingly competitive.

Our project was able to collect data on and compare 23 gerontology graduate programs in Canada and the U.S. To our knowledge this research is the first of its kind to collect data on and analyze trends in gerontology graduate education in Canada. This research also adds to the knowledge available about gerontology graduate education in the U.S. Our research explored a number of different areas in relation to gerontology graduate education which appear to have had limited or no coverage in the past, such as program marketing, alumni interactions, and culminating experiences. It is apparent that our research only scratched the surface of some areas and there are many areas of gerontology education which could be explored in greater depth.

Our research found gerontology doctoral level and master's level programs in the U.S. and Canada appear to be on two different paths of development at the moment. At the doctoral level, the path appears to be a straight road with the continuation of traditional academic practices. At the master's level, on the other hand, the road has more potential pathways for training and education. The traditional thesis-based approach is no longer the norm. Overall, a shift towards more applied gerontology education was observed, particularly in the U.S. This is evidenced by practicum or internship requirements, offering professional development courses or seminars,

introduction of capstone options, and offering applied skills courses (e.g., management, counseling, etc.). Furthermore, there also has been the development of online master's degrees, which were not included in this sample.

Some master's level gerontology programs appear to be struggling with their identity, as they face the challenge of how best to attract students and provide them with the right mix of skills to be successful in an increasingly challenging job market. There are a number of questions which gerontology programs should consider when planning for future change. How can programs best leverage the resources available through community/organizational partners, research affiliates, and alumni? What is the right mix of coursework, applied learning, work experience, and research experience to provide students with the skills they need to succeed? Should separate programs be designed to meet the needs of professionals versus traditional academic students? Should programs tailor themselves to a niche market or attempt to have broad appeal? What differences are there in the quality and experience of an online versus in-class degree? What distinguishes a course-based master's degree from a gerontology graduate certificate? Many of these are areas of inquiry which would benefit from further research in the future.

In order for the field of gerontology to continue to develop, gerontology graduate programs need to be innovative and responsive to the changing needs of society. Our findings suggest opportunities to retrofit gerontological education to better align with student needs, shifting workforce demands and population aging changes. Many programs seem to have embraced providing students with a mix of academic skills, applied skills, and work experience as the way forward. Others have opted for online graduate education with its limitations. The question that programs must ask themselves is how can we best provide students with the right mix of skills to be successful in an increasingly challenging job market?

Recommendations

The Gerontology Department faculty met and reviewed the SCORE report with the aim to identify areas for potential change, innovation, and/or improvement. The following points encapsulate the primary recommendations that the department will review and consider.

- 1) Review gerontology curriculum for core competency educational and training goals of all graduate courses every two years.
- 2) Evaluate course curricula in order to maintain a balance between applied/experiential and basic research skills and knowledge uptake in substantive areas, including emerging areas.

- 3) Enhance the experiential/applied learning experiences of the gerontology programs through the strong network of community organizations and contacts of the faculty and department at large.
- 4) Consider a faculty-level Internship Coordinator (with course release) to strengthen all aspects of the graduate internship, including but not limited to: a) working with the graduate secretary to update and further develop supporting internship information and reporting documents (including the possibility of a searchable database); b) expand the pool of community organizations for practicum/internships; c) organize an annual Internship Workshop for graduate students; d) revisit a Co-op option; e) develop MOUs with past and current graduate internship and diploma program practicum sites and related organizations to facilitate internship advertising, best-fit and placement; and f) explore partnerships with NCEs (Age-Well, Frailty Network, and other large research enterprises such as CLSA) to identify internship opportunities and to leverage resources.
- 5) Contact aging-related NCEs and other large collaborative research initiatives (CLSA, etc.) to investigate potential partnerships for gerontological education and training, including the possibility of a professional certificate program in gerontology.
- 6) Examine the value added of a Thesis/Capstone Proposal Development Course or Pro-seminar for graduate students.
- 7) Further develop a mentoring buddy system to connect alumni/experienced graduates with incoming students.
- 8) Ensure that all graduate students receive some experience as a research assistant during their education and training.
- 9) Identify other avenues to leverage resources in order to support new program changes.
- 10) Contact other graduate departments across the facilities at SFU in order to identify innovation that can be transferred to or shared with our department.

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Appendix 1. Eligible Universities Not Included in Sample

	PhD	MA	MS	Graduate Certificate or Diploma	Graduate Minor, Option or Concentration	Bachelor's or Major	Undergraduate Certificate or Diploma	Undergraduate Minor, Option or Concentration	Other
Bowling Green State University			X			X		X	
California State University, Long Beach			X				X		
Eastern Illinois University		X							
Lindenwood University		X							
Miami University, Ohio	X	X ¹				X		X ¹	
North Dakota State University	X			X	X			X ¹	
Saint Cloud State University			X	X				X	
Saint Joseph's University			X	X					
Towson University			X			X ¹	X	X	
University of Central Missouri		X		X					
University of Louisiana, Monroe		X ²		X				X	
University of Nebraska		X ¹		X ¹	X	X	X	X	
University of North Carolina, Charlotte		X		X				X	
University of North Carolina, Wilmington			X				X	X	
University of Northern Texas		X	X	X	X				
Virginia Commonwealth University			X	X	X				
Youngstown State University		X					X	X	

1. More than one degree/major/minor/concentration/option available.

2. Online or on-campus options.

Appendix 2. Overview of Master's Programs

	# of required/ optional courses*	# of elective courses*	Internship or practicum	Culminating experience	# of students**	# of graduates**
California State University, Fullerton (MS in Gerontology)	5	3-4	Internship	T or C (Project ¹)	35	7-8/year (120 total)
Georgia State University (MA in Gerontology)	6	4	Internship (C)	T or C (Project)	34	10/year (40-50 total)
McMaster University (MA in Health and Aging)	2	2 (T) or 4 (C)	None	T or C (Paper)	8	11/year
Minnesota State University, Mankato (MS in Aging Studies)	5	3-5	Internship	T or C (Paper)	22	3-4/year
Mount Saint Vincent University (MA in Family Studies and Gerontology)	5	2 (T) or 4(C)	None	T or C (Project)	16-17 (Gerontology stream)	5/year
Northeastern Illinois University (MA in Gerontology)	7	2-4	Internship and Practicum	T or C (Exam)	52	3-4/year (67 total)
Queen's University (MS in Aging and Health)	3	4	None	C (Project)	15	N/A
San Francisco State University (MA in Gerontology)	8	1	Internship	T or C (Project)	20-25	10-12/year (300 total)
Simon Fraser University (MA in Gerontology)	3	2 (T) or 4 (C)	Internship	T or C (Project)	17	6/year (100 total)
University of Alberta (MS in Aging)	6 (T) or 4 (C)	2 (T) or 3 (C)	Optional Practicum (C)	T or C (Project) or Practicum	6	3/year
University of British Columbia (MA of Health Leadership and Policy in Seniors Care)	10	1	None	None	15	N/A
University of La Verne (MS in Gerontology)	7	4 ²	Optional Practicum or Internship	T or C (Project)	28	6/year
University of Massachusetts, Boston (MS in Gerontology Research/Policy)	6	5	Optional Internship	C (Project)	2	N/A ³
University of Missouri, St. Louis (MS in Gerontology)	7	3	2 practicum	C (Project)	22	10-15/year
University of North Carolina, Greensboro (MS in Gerontology) ⁴	5 ⁵	3 (T) or 5 (C)	Internship (or 2 if C)	T or C (Portfolio)	10	Data not available
University of Northern Colorado (MA in Gerontology)	8	0-3 ⁶	Optional Internship or Practicum	T or C (Portfolio) ⁷	15	4-5/year
University of Regina (MA or MS in Gerontology)	6	0	None	T	3	7-8 over past 10 years
University of South Florida (MA in Gerontology)	5	0-7 ⁶	Optional Internship	T or C (Exam)	15	5-6/year

University of Southern California (MS in Gerontology [MS], MA in Gerontology [MA], Master of Aging Services Management [MASM], Master of Long Term Care Administration [MLTCA], MS in Nutrition, Healthspan and Longevity [MSNHL]) ⁸	6 (MS), 5 (MA), 6 (MLTCA), 3-5 (MASM), 9 (MSNHL)	3 (MS), 2 (MA), 1 (MLTCA), 5 (MASM), 0 (MSNHL)	Internship (MS), None (MA, MASM, MLTCA), Practicum (MSNHL)	C (Project - MS), C (Portfolio - MSNHL), None (MA, MASM, MLTCA)	350	2,000-2,400 total
University of Waterloo (MS in Public Health and Health Systems)	3	3	None	T	30 (MS & PhD with focus on aging)	Data not available

T = Thesis, C = Capstone

*Internships/practicum and culminating experiences were generally not counted in the counts for number of required and elective courses.

**Some numbers are not exact figures and are estimates based on enrollments/graduations in recent years. McMaster University, San Francisco State University, the University of Alberta, the University of North Carolina, and the University of Regina all noted their current enrollments are lower than usual. The programs at Queen's University and the University of British Columbia have just recently began and so do not have any graduates yet.

1. California State University also offers a comprehensive exam option, but this is currently being phased out.
2. An internship or practicum may replace an elective course.
3. All PhD students are eligible for a concurrent master's degree.
4. A Dual MS in Gerontology-MBA is also available.
5. Additional courses are required for business concentration students and non-profit management concentration students.
6. Students may complete combination of internship, practicum, directed study or thesis credits in lieu of elective coursework.
7. All students complete a portfolio, even if completing a thesis.
8. Specialized degrees (Dual, Progressive and Advanced) are also available.

Appendix 3. Overview of Doctoral Programs

	# of required / optional courses*	# of elective courses*	Other requirements	# of students**	# of graduates**
McMaster University (PhD in Social Gerontology)	4	2	-Non-credit research and professional development seminar -Comprehensive exam and thesis	4	N/A
Purdue University (Dual Title PhD in Gerontology)	3	8	- Students must complete all the requirements of their home department -Dissertation on aging-related topic	12	3/year (29 total)
Queen's University (PhD in Aging and Health)	2	2	-Comprehensive exam and thesis	N/A ¹	N/A
Simon Fraser University (PhD in Gerontology)	5	0-2 ²	-Comprehensive exams and dissertation	5	N/A
University of Kentucky (PhD in Gerontology)	10	4	-Students are assigned an elder mentor -Comprehensive exam and dissertation	18	3-4/year (53 total)
University of Maryland Baltimore (UMB) and University of Maryland, Baltimore County (UMBC) (PhD in Gerontology) ³	15	2	-Non-credit aging forums and seminar series -Comprehensive exam and dissertation	26	4/year (33 total)
University of Massachusetts, Boston (PhD in Gerontology) ⁴	13	6	-Complete an empirical research paper through a research practicum course -Comprehensive exam and dissertation	53	57
University of South Florida (PhD in Aging Studies)	6	0 ²	-Attend a Proseminar/Graduate Seminar Series -Comprehensive exam and dissertation	25	2-3/year
University of Southern California (PhD in Gerontology [G], PhD in Biology of Aging [BA])	8-9 (G), 5 (BA)	7-9 (G), 8-10 (BA)	-Comprehensive exam and dissertation -Complete an empirical research paper through a research seminar course (G)	25 (G), 20 (BA)	50 (G), N/A (BA)
University of Waterloo (PhD in Public Health and Health Systems [PHHS], PhD in Aging, Health and Wellbeing [AHW])	3 (PHHS), 2 (AHW)	7 (PHHS), 2 (AHW)	-Comprehensive exam and dissertation -Requirements of home department and non-credit doctoral seminar on aging, health and wellbeing (AHW)	30 (MS & PhD with a focus on aging)	Data not available

*Internships/practicum and culminating experiences were generally not counted in the counts for number of required and elective courses.

**Some numbers are not exact figures and are estimates based on enrollment/graduations in recent years. The programs at McMaster University, Queen's University, Simon Fraser University and the PhD in Biology of Aging at the University of Southern California have not had any graduates yet.

1. The doctoral program at Queen's University has not yet enrolled any students.
2. Electives may be selected based on individual students' needs.
3. Students also may complete a Combined PhD in Gerontology and MA in Applied Sociology or a Combined PhD in Gerontology and MS in Epidemiology.
4. Students are eligible for a concurrent master's degree.

Appendix 4. Gerontology Education Offered

	PhD	MA	MS	Graduate Certificate or Diploma	Graduate Minor, Option or Concentration	Bachelor's or Major	Undergraduate Certificate or Diploma	Undergraduate Minor, Option or Concentration	Other
California State University, Fullerton			X					X	
Georgia State University		X		X			X	X	
McMaster University	X	X				X		X	
Minnesota State University, Mankato			X	X				X	X ¹
Mount Saint Vincent University		X				X		X ²	
Northeastern Illinois University		X		X					
Purdue University	X			X	X				
Queen's University	X		X	X					
San Francisco State University		X							
Simon Fraser University	X	X					X	X	
University of Alberta			X		X			X	
University of British Columbia		X							
University of Kentucky	X			X					
University of La Verne			X	X ²					
University of Maryland (UMB & UMBC)	X ³								
University of Massachusetts, Boston	X ³		X ⁴	X			X ²		
University of Missouri, St. Louis			X	X			X		
University of North Carolina, Greensboro			X ²	X					
University of Northern Colorado		X		X					
University of Regina		X	X			X			
University of South Florida	X	X		X ²		X		X	
University of Southern California	X ²	X ⁵	X ^{2.5}	X ⁵		X ²		X ²	X ⁶
University of Waterloo	X		X					X ²	

1. Nursing home licensure preparation program.

2. More than one degree/major/minor/concentration/option available.

3. Includes option of PhD combined with a master's degree.

4. The University of Massachusetts offers the MS in Gerontology Research/Policy and MS in Management of Aging Services degrees. As the MS in Management of Aging Services is offered completely online it does not meet the criteria for inclusion and so was not included in the main analysis

5. Available as an on-campus or online degree

6. The University of Southern California also offers a Master of Aging Services Management, Master of Long Term Care Administration, and Specialized Master's Degrees (Dual, Progressive and Advanced)

Appendix 5. Master's Programs Coursework

	Fundamentals	Biology	Health	Sociology	Psychology	Theory	Research	Program	Systems	Policy	Management	Economics	Business	Ethics	Diversity	Death	Environment	Professional	Applied Health Skills
California State University, Fullerton	R						R	R		R								R	
Georgia State University			O	O	O		R	O	O	O					O			R	
McMaster University						R	O												
Minnesota State University, Mankato		O	O	O	O	R	O			O	O					O			O
Mount Saint Vincent University			O	O		R	R			R									
Northeastern Illinois University	R	R			R		R			R				R				R	
Queen's University			R					R						R					
San Francisco State University	R	R	R				R		R	R				R	R			R	
Simon Fraser University			O	O	O		R	O		O								O	
University of Alberta	R						O											R	R
University of British Columbia			R						R	R	R		R					R	R
University of La Verne	R		R				R			R				R		R		R	
University of Massachusetts, Boston				R	R		R			R		R							
University of Missouri, St. Louis			O	O	O	O	O			O									O
University of North Carolina, Greensboro			R				R			O	O	O	O					R	
University of Northern Colorado			R				O	O	R	R	R						R		
University of Regina		R					R	O		O		O		O		O			O
University of Southern California (MS in Gerontology)		R		R	R		R			R	R								
University of Southern California (MA in Gerontology)	R		R	R	R			R		R	O								O
University of Southern California (Master of Aging Services Management)	R										R		R						
University of Southern California (Master of Long Term Care Administration)	R		O	O	O				R	O	R		R						O
University of Southern California (MS in Nutrition, Healthspan and Longevity)		R					R												R
University of South Florida		R		R	R		R					R							
University of Waterloo			R				O												

R = Required, O = Optional

Notes: Some courses were coded into more than one category if there was overlap. Courses not fitting into any of these categories were coded as other and not included in the table. Some universities required completion of more than one course in a category.

Appendix 6. Doctoral Programs Coursework

	Fundamentals	Biology	Health	Sociology	Psychology	Theory	Research	Program	Systems	Policy	Management	Economics	Business	Ethics	Diversity	Death	Environment	Professional	Applied Health Skills
McMaster University						R	R												
Purdue University	R	R																R	
Queen's University						R													
Simon Fraser University			O	O	O	R	O	O		O							O		
University of Kentucky		R	R				R											R	R
University of Maryland Baltimore (UMB) and University of Maryland, Baltimore County (UMBC)		R	R	R	R	R	R		O	R		O		O	O				
University of Massachusetts, Boston				R	R		R			R		R			R			R	
University of South Florida		R	R	R	R		R												
University of Southern California (PhD in Gerontology)		R ¹	R		R		R			R								R	
University of Southern California (PhD in Biology of Aging)		R												R				R	
University of Waterloo (PhD in Public Health and Health Systems)			R				O												
University of Waterloo (PhD in Aging, Health and Wellbeing)	R		R				O												

R = Required, O = Optional

Notes: Some courses were coded into more than one category if there was overlap. Courses not fitting into any of these categories were coded as other and not included in the table. Some universities required completion of more than one course in a category.

1. Only required for biology of aging track. Biology of aging track requires biology courses and a professional development seminar.

