

SSC Accreditation - The Canadian Model

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Abstract

Statisticians now have formal professional recognition in UK, Australia, and Canada. The ISI is considering a similar step. Statistical Society of Canada (SSC) Accreditation of Professional Statisticians operates under recently approved Canadian Federal Trademarks, P.Stat. (Professional Statistician) and A.Stat. (Associate Statistician). There was a general opening for P.Stat. in March, 2004. With sufficient P.Stat. approved to be mentors for A.Stat., there was a first call for A.Stat. applications in June, 2006. The first panelist was Chair of SSC Accreditation Committee at the time when Accreditation was opened, and will outline placement of SSC Accreditation in a multi-disciplinary and international framework.

KEY WORDS: Accreditation, SSC, Professional

1. SSC Accreditation

The SSC offers two levels of accreditation, the Professional Statistician (P.Stat.) and the Associate Statistician (A.Stat.). P.Stat. and A.Stat. are registered Canadian Federal Trademarks held by the SSC which indicate to the broader statistical and non-statistical communities that the holder has achieved a certain level of professional competence in the understanding and application of statistical methods, and maintains a level of ethical practice. A certificate of accreditation level and licensee number are issued to recipients of accredited status. The accredited statistician may affix the received designation to his/her list of professional qualifications.

The qualification of A.Stat. indicates that the holder has completed a course of study equivalent to a major or honours degree in statistics, or in exceptional instances, has otherwise demonstrated an advanced understanding of statistical theory and its application. An A.Stat. is required to have a P.Stat. mentor for professional interactions.

The qualification of P.Stat. is intended to indicate that the holder has the necessary academic qualifications and a minimum of six years experience in the application of statistics. Successful candidates have demonstrated an integration of statistical methods into area(s) of application with good oral and written communication

skills, and maintain professional development appropriate to the area(s) of practice.

SSC Accreditation is for practice in Canada, by a Statistician who is a Canadian citizen or legally entitled to work in Canada. Accredited Members of the SSC maintain their accreditation qualification with the payment of annual SSC membership fees and the annual SSC accreditation dues; the submission of the form with past and current fields of expertise and practice, past year's record of professional development; and the maintenance of ethical professional competency and practice. The Accreditation designation may be affixed to a member's list of qualifications as long as the qualification is maintained. With maintenance, the P.Stat. designation is expected to be for life.

An accredited members' only database with past and new areas of expertise and practice will be kept in a database posted on the SSC website. The database will be used for networking; it will also be used for strategic planning of course offerings, and assessments of strengths and gaps in the expertise available in Canada.

A public database will be available at the SSC website with picture identification of accredited members along with short summaries of career paths. This latter element is expected to be an invaluable resource to promote the discipline of statistics to High School students, early undergraduates, and the broader community.

Additionally, there are two downloadable promotional brochures:

Accreditation of Professional Statisticians in Canada (http://www.ssc.ca/main/about/accreditation/accreditation_e.pdf) and

the SSC Code of Ethical Statistical Practice (http://www.ssc.ca/main/about/accreditation/ethics_e.pdf)

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2. Timeline

Like the ASA, the SSC had an early failure to approve SSC Accreditation. Please see the Appendix for key details of first proposal (1989-1994), and step-wise approval of second proposal (2000-2007).

3. Background

The Interim Accreditation Committee was formed in 2003 following the May-June Meeting of the SSC Board where there was approval in principle to produce accreditation documentation for the October Board's consideration; the direction for the documentation was to follow that approved in the 2001 SSC referendum. The 14 members on the Interim Accreditation Committee listed in the Appendix were chosen to represent the interests of the Society, the statistical profession, and various areas of statistical expertise. In particular, the slate represented major subject matter areas, SSC geographic regions, employer sectors (university, government, industry), and English/French language capability. It also included the founder of ASSQ Accreditation and a RSS C.Stat.

A number of Canadian professional designation model-types were considered.

1. Actuarial (National Charter, by Act of Canadian Parliament)
2. Professions (Medicine, Law, Engineers; Provincial Charters)
3. Physicists (National Federal Trademark)

At the time, types 1.-3. all had examinations. Actuarial exams were run in conjunction with the American Society of Actuaries. Examinations were not viewed as possible without the ASA, nor were they viewed as necessary since most formal statistical education is already graded through University courses. Statisticians hold quite a spectrum of different professional roles in Society, which would not easily be defined for a National Charter. Provincial Charters would franchise heterogeneous groups of professional Statisticians in only a few provinces. The Physicists' model of Federal Trademarking seemed feasible with National identification for a relatively small group of participants. The Physicists' legal team looked after SSC Accreditation, and there was a sharing of previously developed materials and procedures that were customized to Statistical perspectives and needs.

International Statistical frameworks were investigated to define a context for the discipline as it is practiced in Canada: (S1.) ASSQ Accreditation, (S2.) RSS Chartering, (S3.) Australian Accreditation, and (S4.) the failed ASA Certification.

(S1.) ASSQ Accreditation is equivalent to an undergraduate in Statistics. Written work may be examined as corroborative evidence, should an applicant not have sufficient formal Statistical training. There are no examinations.

(S2.) RSS Chartering is equivalent to an undergraduate in Statistics (G.Stat.); with 5 years experience of any type, a candidate may become a Chartered Statistician (C.Stat.).

(S3.) Australian Accreditation is equivalent to an undergraduate in Statistics (G.Stat.); with 5 years experience, plus extensive examination of qualifications, a candidate may be accredited (A.Stat.).

(S4.) Elements of failed ASA Certification were considered. These included curriculum guidelines for undergraduate programs in statistical science, possible examinations, recognition of need for professional statisticians to cohesively integrate statistical theory appropriately for area of application and being able to communicate about it, and two different versions of a code of ethics (paper brochure, website).

Ethics statements and appeal procedures were examined for Canadian Actuaries, Ontario Engineers, Canadian Physicists, RSS Chartering, Australian Accreditation, and ASA Certification.

4. SSC Accreditation Process

The main Accreditation document was written with extensive interaction with the Physicists'/SSC legal team to protect the interests of the SSC,

1) written from general in the introduction to specific in later sections, (i.e. description of association with Canada, which the Accreditation Committee wanted to be as broad as possible to include all practitioners who might apply – those working part-time in Canada, those in Canada on sabbatical or as students, or those working under UN auspices);

2) in generalities, to preclude definitive decision-making statements;

3) in legal terms/principles, as interpretations should be those in law. Like the SSC Bylaws, conflicts may arise between English and French documentation; interpretation is to be made by the SSC Board of Directors. The main Accreditation document was approved by the SSC Board on March 20, 2004, amended June 12, 2005, and is submitted with the Federal Trademark applications,

<http://www.ssc.ca/main/about/accreditation/sscaccreditati on e.pdf>. The precepts for SSC Accreditation were reached by consensus of the Interim Accreditation Committee to be the following:

1. The most important element is the integration of statistical theory in a manner appropriate for the area of application (subject matter), and in particular, for specific problem(s) and data. Professional development should be that appropriate to support both enhancement of statistical skills and knowledge of its application

- in the area(s) of application; the # of hours of professional development would not be recorded, although qualitative amount may be inferred from required annual reports. Ethics includes a recognition that acquisition of subject matter specific knowledge is necessary for successful practice of statistics; the Code of Ethical Statistical Practice was announced to the membership and posted at the website for comments or objections in October, 2003. Only positive responses were received.
2. It is essential that accredited members be able to communicate well, both orally and in writing, about integrated statistical work in a subject matter area. However, there was a recognition that the type of demonstration of these abilities would need to vary by particular subject matter areas and could be difficult to demonstrate in some instances due to confidentiality. Three levels of Special Review were instituted to accommodate the full spectrum of anticipated confidentiality needs.
 3. A recognition of formal University course work for A.Stat. applicants was planned from the beginning to streamline applications for those who acquire Statistical Educational training in primary training. These applicants will be required to complete an A.Stat. application which includes documentation demonstrating completion of required elements, provide a 1 page written summary, and the names of 2 referees who will be contacted at least for an oral skills reference. The required elements may be completed in undergraduate or graduate training, at 1 or more institutions, and work term(s) may substitute for subject matter courses. These candidates should find it easier to complete an application than applicants with more varied backgrounds.
 4. Common background elements between other professional Statistical designations would be recognized towards SSC Accreditation. Joint participation in multiple programs would be encouraged with reduced application fees (less review work required where another Statistical organization has reviewed elements) and reduced annual dues (comes with offsetting enrichment between Statistical domains).
 5. A level of 6 years cumulative professional experience in the application of statistics was set as a requirement for the P.Stat. designation, with the acquisition being possible with up to 3 years of applied work during graduate training (e.g. consulting, co-operative work) and up to 3 years of teaching applied courses or consulting. i.e. The practice of Canadian professional statistics will be enhanced by networking between those in different employer sectors (university, government, industry).
 6. A solid professional statistical background may not be acquired solely with formal statistical training. Alternate career paths must be accepted if there is a demonstration of attainment of accreditation level.
 7. Retirees and unemployed may have a wealth of practical experience to share; their participation in SSC Accreditation would be encouraged with reduced application fees and annual accreditation dues.
 8. The level of checking credentials, in particular ethical behaviour, was decided to be a system appropriate for Canadian Society, mid-way between British "honour system" and high intensity of the Australian. i.e. In SSC Accreditation applicants who misrepresent their qualifications, would be in non-compliance with Ethics and could be subject to action(s) recommended by the Appeals Committee if this situation is brought forward. Several levels of prevention to approving such an applicant include independent review by at least two reviewers, circulation of recommendations to other eleven Accreditation Committee members and then to SSC Board members for "any concern". It was thought that although Canada is very diverse and large, that the Statistical Community is well-dispersed throughout it, such that there could be knowledge of major issues available to those who would see the recommendation. Concern raised would be investigated prior to Board approval of an applicant.

A similar situation may arise later in the practice of an accredited member; there was a decision that an investigation would take place only with receipt of formal complaint, i.e. there would be no overt review of accredited members' practice.
 9. The Appeals process was very carefully drafted to respect the rights of all parties of a complaint, to provide every opportunity for mediation/resolution with multiple groups of panel members available should conflicts be present for any of the parties in an appeal, and then

where possible, to preserve the ability of the independence of the Board and SSC President for final review of Appeals. The whole process would take place in a timely manner, with legally advised 90 days for cessation of usage of trademark for revoked accreditation status, followed by again, the legal maximum for revocation for accredited status of 5 years.

10. Preventive support and mediation would be the hallmarks of SSC Accreditation.
11. Mentoring of new practitioners, regardless of educational level of achievement, is necessary to assist in transition to practice:

http://www.ssc.ca/main/about/accreditation/SSCMentoring_e.pdf

(Approved by SSC Board, October, 2004). The choice of mentor should be left primarily to the mentee who would be provided with the accreditation database of those willing to mentor, since it may be necessary to choose preference between in-person mentoring (lower match on subject matter) versus virtual mentoring (better subject matter match). Facilitation would take place as required to ensure timely acquisition of mentor. Successful mentoring will involve the development of a relationship between mentor and mentee. The type and amount of mentoring will vary by whether the participants have the same employer, by style of mentoring [individual, versus group (akin to medical residency, which might be done with email discussion list or group meetings); or, in-person, versus virtual], by desired/needed level of mentoring which will vary by person as well as by experience of mentee.

12. Networking between practitioners requires facilitation, and enhancement in Canada. A database with past and current expertise would be shared with accredited members to facilitate networking. New (regional) programs will be established to promote professional development.
13. Elections are to be held, like the Sections, in conjunction with SSC Elections. The (Past-, or for first 2 elections the Outgoing-) Chair of the (Initial/Ongoing) Accreditation Committee sits on the Elections Committee. Nominations are made by the Accreditation Committee for both the Accreditation Committee and the Accreditation Appeals Committee.

Candidates are to be P.Stat. and voting is to be by P.Stat.. It was thought that application acceptance/rejections, and other decision-making on both the Accreditation Committee and Accreditation Appeals Committee required P.Stat. level experience. Further, as A.Stat. may apply to become P.Stat. or appeal a decision about their application, it was not thought appropriate for A.Stat. to vote. A.Stat. involvement in a host of other Accreditation professional activities would be most welcome. [Aside: Recently, there has been an award suggested for Mentoring, which might be viewed as operating with nominations by only A.Stat.]

Extensive discussion about the term of office revolved around maintenance of core of experienced Committee Members, length of time to acquire Committee experience, and minimizing turn-over for stability in decision-making. A two year term, followed by replacement would be too short; a three year term would lead to too much turnover; a mandatory 4 year term might be too long for candidates to guarantee up front. The plan of maximum two contiguous, two year terms, with "intention" to maintain approximately half the members at each Election, and with replacement possible mid-term was thought to be a balanced approach, especially for the Accreditation Committee where the inclusion of Chair in the count for "approximately half" would permit extra flexibility. The clause of drawing of lots to maintain the required number of Committee Members seemed a reasonable mechanism to achieve unbiased decisions about maintaining the numbers staying, or leaving. As the Appendix shows, the practice to date has been for Accreditation Committee Members to want to stay from one Committee formation to the next, and random drawing to remove Members was in fact necessary for 3 candidates in the first Election.

Additionally, to minimize conflict in decisions on the Appeals Committee, no Accreditation Committee member may serve on that Committee for at least two years after leaving the Accreditation Committee.

14. Financial aspects, in interface with SSC:

After establishment, SSC Accreditation has been self-sustaining for operating costs, with contingency fund planning for future quantum needs for supplies, legal fees,

Appeals Meeting costs;

P.Stat. application fees would be halved for those accredited/chartered/certified by other Statistical organizations, retirees, and the unemployed;

P.Stat. applicants would be required to join the SSC prior to application processing;

A.Stat. applicants would only be required to join within 4 months of being accredited;

First year accreditation dues for those approved at the June Board Meeting are half of that year's annual dues and collected immediately following notification of successful application;

Dues for those accredited at an October Board Meeting are waived for that year;

Requirement of maintaining SSC membership will generate not only stable SSC membership from previously associated SSC members, but new SSC members who have only marginal additional costs to SSC. To maximally reap the benefits of the new money, there was going to be a SSC investment in professional programs with some of these extra funds. This investment would benefit all SSC members and the discipline at large.

Appendix: History of SSC Accreditation - The Canadian Model

- In 1989, Fernando Camacho, alerted the SSC to the Engineers' challenge to practice. This was the basis for the first consideration of SSC Accreditation; it failed in 1994 (1). The Engineers' actions led to Canadian Association of Physicists' (CAP) model of Federal Trademarking.
- In 1995, the Professional Standards, New Zealand Code of Conduct was introduced to the SSC by Liaison Editors who organized a broad spectrum discussion (2) by Stephen Fienberg (Carnegie Mellon University), Fernando Camacho (Ontario Hydro, Chair SSC Committee on Professional Accreditation), David Binder (Statistics Canada), Richard Shillington (Consultant), Danielle Morin (Concordia University, President of Statistical Society of

Montreal),
Judy-Anne Chapman (Women's College Hospital, SSC Public Relations Officer),

Jerry Lawless (University of Waterloo, SSC Past President),

Jim Tomkins (University of Regina, SSC President).

Response by Harold Henderson (Ruakara Agricultural Center, Hamilton, NZ; NZSA President) and Garry Dickinson (Statistics New Zealand, Wellington, NZ; Chair Working Party who drafted Code).

- In 1998, Statistical Society of Australia instituted 2 level Accreditation: presented with background rationale in Liaison (3).
- In 1999, SSC Strategic Development Plan identified satisfying the needs of practicing statisticians as an action item (4).
- In 2000, there was extensive Discussion of Accreditation in Liaison (5-9), SSC 2000 Annual Meeting Panel (8), and discussion with Nick Fisher about Australian Accreditation`.
- In June, 2000, the SSC Board approved Ad Hoc Accreditation Committee, to set stage for national approach; it was to include ASSQ representative as ASSQ was working on Accreditation strategy (7).
- In 2001, a SSC referendum approved development of strategy for 2 level Accreditation (10-12).
- In July, 2001, the SSC Board established Committee for Implementation of Accreditation (13).
- Liaison and SSC Meeting presentations continued (e.g. 14-17). Besides the Australian experience, RSS Chartering experience was presented by Denise Lievesley.
- In June, 2003, the Board approved the establishment of Interim Accreditation Committee for legal formalization. Jon Baskerville, Chair of Professional Development Committee was member of Committee, as was Pierre Lavalley, "Father of ASSQ

Accreditation”, and Geoff Hole, RSS C.Stat. (18).

- In October, 2003, the SSC Code of Ethical Statistical Practice was announced to the SSC membership and posted, with invitation for comments or objections. Only positive responses were received.
- In October, 2003, the SSC Accreditation process for Federal Trademarking was approved in principle by the SSC Board:

P.Stat. #1 (Ken McRae) and
A.Stat. #1 (Statistics Canada nominee – Claude Girard)
both of whom passed Accreditation Committee review (19,20).
- In December, 2003, the Federal Trademark application was submitted (21).
- In March, 2004 (22,23), the SSC Board approved the SSC Accreditation legal document, the P.Stat. on the Initial Accreditation Committee and Initial Accreditation Appeals Committee (Appendix 1). There was a first general call for P.Stat. applications while A.Stat. applications were on hold pending a sufficient number of P.Stat. for good matching with P.Stat. mentors.
- In March 21, 2006, the Federal Trade-mark was posted for P.Stat., A.Stat.
- In Spring, 2006, there was a first election of Accreditation Committee members.
- In June, 2006, the SSC Board approved pilot opening for A.Stat.
- In October, 2006, there was a general opening for A.Stat. applications.
- In June, 2007, the SSC Board approved Accreditation Committee use of University-specific course checklist list for A.Stat. applications. The Accreditation Committee approved the first 3 University lists:
University of Manitoba
University of Ottawa
Simon Fraser University

Acknowledgements:

Accreditation Chairs:

1. Fernando Camacho
2. (Co-Chairs) Ernie Enns, Ken McRae
3. Judy-Anne Chapman
4. Carl Schwarz.

Members of joint Professional Development – Accreditation Committee:

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Accredited by August, 2007:
101 P.Stat., 12 A.Stat.

Accreditation Professional Development:

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Jon Baskerville.

References

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Initial Accreditation Committee approved March, 2004:

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Fernando		Camacho
Gemai		Chen
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Sylvia		Esterby
Zoltan		Harsanyi
Geoff Hole		
Pierre Lavallée		

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2. Louis-Paul Rivest
3. David Brillinger
4. James Ramsay
5. Mary Thompson
6. Nancy Reid
7. David Binder
8. Charmaine Dean
9. Christian Genest

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1. John Nash
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