

Mathematicians, Statisticians & Actuaries

An employment guide for newcomers to British Columbia



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Mathematicians, Statisticians & Actuaries (NOC 2161)

Mathematicians, Statisticians & Actuaries

may also be called:

- *consulting actuary*
- *actuarial analyst*
- *insurance actuary*
- *demographer*
- *statistical analyst*
- *biostatistician*

1. What Would I Do?

Mathematicians, Statisticians & Actuaries research mathematical or statistical theories, and develop and apply mathematical or statistical techniques for solving problems in fields such as science, engineering, business and social science. They apply mathematics, statistics, probability and risk theory to assess potential financial impacts of future events.

Mathematicians' duties may include:

- carry out research to gain mathematical knowledge in traditional areas such as algebra, geometry, probability and logic
- apply mathematical techniques to problem solving in areas like physical science, engineering, computer science, operations research, business or management

Statisticians' duties may include:

- carry out research into the mathematical basis of the science of statistics

- develop statistical methods and advise on the practical application of statistical methods
- apply statistical techniques to provide information in fields such as biological and agricultural science; business and economics; physical sciences and engineering; and the social sciences

Actuaries' duties may include:

- apply mathematical models to forecast and calculate the probable future costs of insurance and pension benefits
- design life, health, and property insurance policies and calculate premiums, contributions and benefits for insurance policies, pensions and superannuation plans
- assist investment fund managers in portfolio asset distribution decisions and risk management
- provide legal evidence on the value of future earnings

More information:

- **WorkBC Career Profile for Mathematicians, Statisticians & Actuaries**
<https://www.workbc.ca/Job-Seekers/Career-Profiles/2161>

2. Am I Suited For This Job?

Mathematicians, Statisticians & Actuaries should have:

- aptitude for math
- problem-solving skills
- good communication skills

They should be:

- creative
- logical
- analytical
- Able to work independently

Mathematicians, Statisticians & Actuaries usually work indoors in an office or educational institution

Sources:

- **WorkBC Career Profile for *Mathematicians, Statisticians & Actuaries***
<https://www.workbc.ca/Job-Seekers/Career-Profiles/2161>
- **Career Cruising** database (Profiles for 'Mathematician', 'Statistician' and 'Actuary'). <http://www.vpl.ca/digital-library/career-cruising/>

3. What Are The Wages And Benefits?

WorkBC reports that the **median** annual salary for Mathematicians, Statisticians & Actuaries in British Columbia is approximately \$68,927.

Canadian Business magazine reported a 2015 **median** annual salary of \$89,606 for '**Statistician & Actuary**' across all Canadian locations.

Career Cruising reports that across Canada:

- most **statisticians** earn somewhere between \$45,000 and \$95,000 a year; senior statisticians can earn more than \$100,000 a year
- **actuaries** who have passed all of the associate-level* exams can expect to make between \$65,000 and \$80,000 a year; passing the fellowship-level* exams could mean an annual salary somewhere between \$80,000 and \$100,000, or more.

*associate level and fellowship level exams are conducted by the Canadian Institute of Actuaries (<https://www.cia-ica.ca/>)

Sources:

- **WorkBC Career Profile for *Mathematicians, Statisticians & Actuaries***
<https://www.workbc.ca/Job-Seekers/Career-Profiles/2161>
- Canadian Business magazine: 'Canada's Best Jobs 2015: Statistician & Actuary'
<http://www.canadianbusiness.com/lists-and-rankings/best-jobs/2015-statistician-actuary/>
- **Career Cruising** database (Profiles for 'Mathematician', 'Statistician' and 'Actuary'). <http://www.vpl.ca/digital-library/career-cruising/>

4. What Is The Job Outlook In BC?

WorkBC reports that for the period 2014-2024, the expected annual demand growth rate will be 1.1% across the province.

In the **Lower Mainland - Southwest region** of BC, WorkBC reports the average annual employment growth will be 1.3% with 160 expected job openings.

Mathematicians, Statisticians & Actuaries NOC 2161

1.1% Expected annual demand growth rate (2014-2024) **180** Job openings (2014-2024)

N/A - Data not available or not provided due to data quality issues

Occupation Outlook for B.C.:

| | |
|--|------|
| % of job openings from replacement | 60% |
| % of job openings from expansion | 40% |
| Average annual growth rate of employment (2014-2024) | 1.1% |
| Expected cumulative job openings (2014-2024) | 180 |

JobBank Canada reports that in the **Lower Mainland - Southwest region** for the 2015-2017 period, the **employment outlook is expected to be good** for Mathematicians, Statisticians and Actuaries. Employment growth is expected to be moderate and a large number of people are expected to retire.

Sources:

- **WorkBC Career Profile for Mathematicians, Statisticians & Actuaries**
<https://www.workbc.ca/Job-Seekers/Career-Profiles/2161>
- **JobBank Canada, Employment Outlook**,
<http://www.jobbank.gc.ca/home-eng.do?lang=eng>

5. How do I become a Mathematician, Statistician, or Actuary

WorkBC reports that:

Mathematicians and statisticians usually require a graduate degree in mathematics or statistics.

Actuaries usually require post-secondary education in actuarial science, mathematics, statistics, economics, commerce or business administration. In Canada, the designation of 'actuary' is assigned by the Canadian Institute of Actuaries (CIA). CIA candidates apply for either:

- 'Associate, Canadian Institute of Actuaries' designation (successful completion of series of professional exams required)

OR

- 'Fellow, Canadian Institute of Actuaries' (successful completion of a larger series of exams **and** three years of work experience in the actuarial field as an actuarial assistant or in a related position)

For more information on the Canadian Institute of Actuaries (CIA) enrollment requirements, see:

<https://www.cia-ica.ca/about-us/actuaries/careers/enrolment/associate>

<https://www.cia-ica.ca/about-us/actuaries/careers/enrolment/fellow>

Career Cruising reports these requirements:

Mathematicians: at least an undergraduate degree in mathematics but most employers require a Masters degree or even PhD.

Statisticians: a bachelor's degree in statistics or mathematics is the minimum educational requirement but the minimum requirement for most statistician jobs is a master's degree in statistics or mathematics

Source:

Career Cruising database (Profiles for 'Mathematician', 'Statistician' and 'Actuary').

<http://www.vpl.ca/digital-library/career-cruising/>

6. How Do I Find A Job?

Where would I work?

Mathematicians:

- *governments, companies, and universities*

Statisticians

- *government agencies, pharmaceutical firms, and companies involved in scientific research and development*

Actuaries:

- *insurance companies, actuarial consulting firms, financial services companies (banks & trusts), pension benefit consulting firms, government departments*

Finding Advertised Jobs

Jobs are advertised in a variety of sources including newspapers, magazines and online job sites.

Local Newspapers

You can look at the *Vancouver Sun* & *The Province* at Vancouver Public Library for free. Check the job postings daily, the careers section in the *Vancouver Sun* on Wednesdays and Saturdays and, in *The Province* on Sundays.

Online Job Postings

- Canadian Institute of Actuaries (CIA) - Online actuarial jobs bank
<https://www.cia-ica.ca/sponsorship-advertising-jobs-bank/jobsbank>
- Canadian Mathematical Society (CMS), Employment Resources
<http://cms.math.ca/Employment/>
- Math Jobs.org
<https://www.mathjobs.org/jobs?joblist-0----40-s-cCA> [postings across Canada]

- Society of Actuaries (SOA)
http://jobs.soa.org/home/index.cfm?site_id=367 (go to 'location' box that shows 'all states', click on drop down and select 'British Columbia')
- Statistical Society of Canada (SCS), Jobs
<http://www.ssc.ca/en/jobs>
- BC Statistics [agency of the province of BC]
<http://www.bcstats.gov.bc.ca/AboutUs/Jobs.aspx>
- BC Public Service
<http://www.gov.bc.ca/myhr/employment>
- Statistics Canada – Careers
<http://www.statcan.gc.ca/eng/employment/index>
- **Indeed.ca**
http://ca.indeed.com/advanced_search
<http://ca.indeed.com/Mathematics-jobs-in-Vancouver,-BC>
<http://ca.indeed.com/Statistics-jobs-in-Vancouver,-BC>
<http://ca.indeed.com/Actuarial-jobs-in-Vancouver,-BC>
- **Neuvoo**
<http://neuvoo.ca/en>
- **WorkBC**
<https://www.workbc.ca/JobSeekers/SearchResults.aspx>
- **BC Jobs.ca**
<https://www.bcjobs.ca/>

Finding “Hidden Jobs”

Many job vacancies are not advertised. The resources below will help you *with finding jobs in this “hidden” job market.*

Using Directories to Create a List of Potential Employers

You can use directories to produce lists of employers who are in this industry. Contact them directly to find out if they're hiring.

- **Actuarial Employers (Canadian Institute of Actuaries)**
<https://www.cia-ica.ca/about-us/actuaries/careers/employers>

- **Reference Canada**

<http://www.vpl.ca/digital-library/reference-canada>

Click on "Start Search" beside Canadian Businesses, then select the "Advanced Search" button. Select both "Keyword/SIC/NAICS" under Business Type and "City" under Geography. In the top search box enter "mathematicians" ** and click SEARCH. Select the appropriate headings. Lower down, select the Province, choose the cities, and click the "View Results" button. **You can also try searching on "mathematicians" or "actuaries".

Available from the VPL Digital Library | Explore our Digital Library page

NOTE: *You can access this database from a Library computer. If you are using a computer from outside the Library, you will need a Vancouver Public Library card to login to this database. After clicking on the database name, you will be asked to enter your library card number and PIN (usually last four digits of your telephone number).*

Networking, Volunteering and Temporary Agencies

Many positions are filled by people who have been recommended by someone they know. Networking, working as a volunteer or registering with a temporary employment agency are good ways of helping you find jobs and meet people in your industry.

Networking and the Hidden Job Market:

When looking for work, be sure to talk to friends, relatives and neighbours. They may know someone who is hiring! Working as a volunteer, attending events, and joining clubs and associations are good ways to gain "Canadian experience." They are also good ways to meet people to learn about the local job market.

Volunteer opportunities

- **Volunteer BC**

<http://www.volunteerbc.bc.ca/>

- **GoVolunteer.ca**

<http://govolunteer.ca/>

- **Statistics without Borders [American Statistical Association]**
<http://community.amstat.org/statisticswithoutborders/home>
- **Canadian Institute of Actuaries - CIA**
<http://www.cia-ica.ca/professional-development/volunteering> [volunteer opportunities for *CIA members only*]
- **Society of Actuaries - SOA**
<https://www.soa.org/volunteer/>

For additional tips see:

- **Networking for Employment**
Go to <http://skilledimmigrants.vpl.ca>
[Search Networking for Employment]
- **Getting Canadian Work Experience**
Go to <http://skilledimmigrants.vpl.ca>
[Search Getting Canadian Work Experience]

7. Applying for a Job

In Canada, employers usually expect to receive a resume and a cover letter that identifies the position you are applying for and summarizes your experience. Use the library catalogue, <http://vpl.bibliocommons.com/> to find books on writing resumes and cover letters specific to your industry.

For more information see:

- **Writing Resumes and Cover Letters**
Go to <http://skilledimmigrants.vpl.ca>
[Search Writing Resumes and Cover Letters]

8. Where Can This Job Lead?

With experience, actuaries may progress to managerial positions in consulting, insurance and finance. They may also be self-employed.

9. Where Can I Find More Information?

- **Actuarial Foundation of Canada**
<http://www.afc-fac.ca/>
- **Canadian Institute of Actuaries (CIA)**
<https://www.cia-ica.ca/>
- **Canadian Mathematical Society (CMS)**
<http://cms.math.ca/>
- **Society of Actuaries – Canada (SOA)**
<https://www.soa.org/canada/>
- **Statistical Society of Canada (SSC)**
<http://www.ssc.ca/>

Questions? Please ask the Information Staff at the Central Library or telephone 604-331-3603.

Please note that the information in this guide is also available online through the Skilled Immigrant InfoCentre website at <http://skilledimmigrants.vpl.ca/>.