Preparing for the Job Market

CSEB Webinar

October 8, 2015

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Talking Points

- About Us
- What are Epidemiology and Biostatistics?
- Education & Training
- Employment Trajectories
- Preparing for the Job Market
- Applying to Graduate School
- Academic, Public, Not-for-profit, and Private Sector Careers
- The Canadian Society for Epidemiology & Biostatistics (CSEB)
- CSEB 2016
Poll - Who are you?

- Undergraduate student
- Graduate student – Masters, PhD
- Junior – newly graduated, <5 years experience
- Mid-level – 5 to 10 years experience
- Senior – 10+ years experience
MSc, Epidemiology and Biostatistics, McGill University

Research Assistant, MS Pharmaccess

1997-2000

Research Associate, Ctr for Clin Epi and Community Studies, JGH

1999-2005

PhD, Epidemiology and Biostatistics, McGill University

2002-05

CSEB, Communications Committee (chair) and Membership Committee, Executive Committee, VP IJPC-SE

2000-2005

Postdoc and Research Associate, CE&B, McMaster University

2005-08

Assistant Professor (2008-2013) and Associate Professor (2013-2014), CE&B, McMaster University

2008-14

Associate Professor, SPHHS, University of Waterloo

2014-

Mark Oremus
Epidemiologist

• “an investigator who studies the occurrence of disease or other health-related conditions or events in defined populations...may study disease in populations of animals and plants, as well as among human populations” (Last, 2001)

• Profile of the “epidemiologist” has changed overtime given the many areas of specialization and application

• Some core competencies framed by a common knowledge –base and skill-set (may vary depending on field e.g. public health, health services and policy, HRM, biostatistics, etc.)
Fields of Study & Application

Aboriginal Health Epidemiology
Aging
Bayesian Statistics
Biostatistics (general)
Cancer Epidemiology
Cardiovascular Epidemiology
Chronic disease/Non-communicable diseases
Clinical Epidemiology
Epidemiologic Methods
Global Health
Health and Social Policy
Health Economics
Health Informatics
Health Services Research
Health Technology Assessment

Infectious Diseases
Mental Health
Meta-analysis / Systematic Reviews
Molecular and Genetic Epidemiology
Neurological Disorders
Nutritional Epidemiology
Occupational and Environmental Health
Pharmacoepidemiology
Population and Public Health / Preventive Medicine
Reproductive, Perinatal and Child Health
Respiratory Epidemiology
Social and Behavioural Epidemiology
Women’s Health

And many more…..
Education & Training

• A minimum  Master’s Degree in a program including, but not exclusive to, Epidemiology, Community Health, Biostatistics, Health Sciences, Public Health.

• Basic core competencies in Epidemiology/Biostatistics, however not standardized across Canada.

• Competencies: action-oriented statements that delineate the essential knowledge, skills, and abilities in the performance of work responsibilities. Are describable and observable.
### Occupation: Epidemiologist

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<th>Level</th>
<th>Examples of Functional Responsibility</th>
<th>Educational/ Experiential Criteria</th>
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<tr>
<td>Entry-level or basic epidemiologist</td>
<td>Simple data collection, analysis, and reporting in support of epidemiologic investigations, surveillance, research, or policy analysis.</td>
<td>• New Master’s degree graduate with minimal experience but from a Master’s program with a focus ion epidemiology and/or analysis and assessment</td>
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<tr>
<td>Tier 2 – Mid-level epidemiologist</td>
<td>Simple and more complex data collection, analysis, and interpretation. Can work independently; or supervise a unit or serve as a project leader or coordinator.</td>
<td>• Master’s degree with a focus in epidemiology with 2 or more years’ work experience in epidemiology; or •Doctoral level epidemiologist</td>
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<tr>
<td>Tier 3— Senior-level epidemiologist</td>
<td>Supervisor and/or manager, director of a major research initiative, project, or section; or Senior scientist/subject area expert in an epidemiologic focus area.</td>
<td>• Master’s degree with a focus in epidemiology &amp; ≥4 years’ work experience in epidemiology; or • Doctoral-level degree in epidemiology supplemented with ≥ 2 years’ work experience at a Tier 2 level.</td>
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## Occupation: Biostatistician

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<th>Examples of Functional Responsibility</th>
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<tr>
<td>Masters –level biostatistician</td>
<td>Carries out complex data analysis, often works as part of a team, may occasionally supervise an analysis team in a large research centre or industrial setting (after 5+ years of work experience)</td>
<td>• Master’s degree with a focus in statistics with application in the health sciences with 2 or more years’ work experience in epidemiology/biostatistics; or</td>
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<tr>
<td>Approximate salary range:</td>
<td></td>
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<td>$45K to $90K</td>
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<tr>
<td>Senior-level biostatistician</td>
<td>Senior scientist, consulted for projects involving complex statistical methods, can work as part of team or independently, can manage a team of biostatisticians/analysts</td>
<td>• Master’s degree with a focus in statistics /biostatistics and ≥5 years’ work experience in health sciences; or</td>
</tr>
<tr>
<td>Approximate salary range:</td>
<td></td>
<td>• Doctoral-level degree in statistics or epidemiology with specialization in biostatistics, supplemented with ≥ 4 years’ work experience</td>
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The Type of Career You Want

- Identify what area interests you and look at job postings to get an idea of the entrance requirements (minimum degree, previous experience required [fresh out of school or ‘X’ number of years of experience])
- Simply Google ‘epidemiology job Canada’ or ‘biostatistics job Canada’ to get an idea of the types of jobs that are available
- Not all jobs are advertised
  - Word of mouth
  - Employer already has someone in mind
Getting in the Door

- Networking helps – plant ‘seeds’
  - Tell people you are looking for work
  - Do a good job in your volunteer work or COOPs
    - Employers remember good workers
  - Send tailored applications to prospective employers
    - If a CRO is looking for a data analyst with experience in big data, and you just analyzed a 20,000-person dataset for your MSc in biostats, then apply for the job
- Generic job inquiries often do not work
  - Faculty delete blanket e-mails sent to every prof in the department
  - Companies usually throw out unsolicited CVs
Plan Ahead

- Ask yourself whether you would like to work in industry, government, or academia
- Look at the job advertisements to understand where you need to develop your CV
  - Do you need work experience?
  - Do you need to get a publication?
  - Do you need to know a certain software package?
    - SAS software is a must for industry or government
Plan Ahead

- **Do you need to take epi or stats courses?**
  - Those film and philosophy courses are useless if you want to get into epi or biostats

- **What program should you take in graduate school?**
  - To get a job in epi or biostats today, you will almost certainly need a Master’s degree
  - PhDs are needed for academia, but are not as essential for industry or government
    - Some industry or government jobs do ask for PhDs (check the job advertisements!)
Choose your program well

- Do not apply to an MSc in epidemiology if you want to study public health (yes, there is a difference)
  - MSc – Epi: often thesis-based and research oriented
  - MPH: often course-based with practicums or COOPs, designed for people who wish to work in a public health department

- You can get a job in public health with an MSc, or work in academia with an MPH, but applying to a grad program with the wrong focus could lead to a rejection letter (you do not ‘fit’ the program)
Graduate School

• Tailor your letter of intent to the purpose of the program
  • E.g., McMaster’s HRM MSc program is designed for people who want to work in research
    • Tell readers at the outset that you are applying to the HRM program because you want to pursue a career as an independent researcher and the HRM MSc is a means to help you achieve your career objective
  • Describe your previous research experience (paid, COOP, volunteer)
    • Be specific about what you did, e.g., data entry or analysis, screening articles for a systematic review, etc.
Graduate School

• Highlight relevant courses in your letter
  • If you are applying to an MSc in epi, or an MPH, draw the readers’ attention to any epi or stats courses that you completed as an undergrad
  • If you are applying to an MSc in biostats, you probably have a math/stats background, but you can still highlight any health-related courses that you took at undergrad
Graduate School

• Avoid storytelling in your letter
  • “When I was 10 years old, my uncle’s best friend’s sister got sick and I was touched by how the doctors used medical research to treat the disease. After that, I decided to become a researcher.”
  • A sure way to lose the reader’s attention quickly!

• Come clean and explain big gaps in the CV or poor grades (do not make excuses or blame everyone but yourself!)
Graduate School

- Grades versus experience
  - Many graduate programs in epi and biostats look at applicants’ overall dossiers, not just their grades
  - Students with B+ or A- averages can get into grad school, but experience is the key
- Get research experience before you apply to grad school
  - Paid student RAships
  - Volunteer in a professor’s research unit
  - COOPs
  - Independent studies, honour’s theses
Graduate School

• Some professors ‘try out’ undergraduate students and offer the good ones a placement in their research units as MSc students
  • Many departments will admit students based on a potential supervisor’s recommendation
• Having a supervisor lined up is not essential to getting into grad school, but it helps!
  • Approach potential supervisors carefully, especially if they do not know you
    • Pick profs with shared interests
    • Send tailored e-mails with specific examples of how your experience meshes with a prof’s research program
    • Do not just say that you read some of the prof’s papers and you are interested in her/his work (we know you did not read our papers)
  • Spell our names right and get our universities correct
  • Get your letter proofread!
Graduate School

- Letters of reference
  - Most letters say good things about applicants and therefore do not make or break an application
  - Really good letters can sway an admission decision in an applicant’s favour
  - Get letters from profs whom you know well and whom you have worked with in the past
    - More likely to get a good letter from them
    - They can comment on your research ability and work habits (this is what admissions committees really want to know)
Letters of reference

- Letters from profs whom you know only because they taught you in a course are of limited value!
- Profs usually cannot get to know students well enough in classroom settings to write the kind of letter that can make a difference on a grad school application
- The situation is amplified when an ‘anonymous’ student in a class of 300 asks for a letter
- Most profs have generic reference letters for these kinds of requests (cut and paste letters)
- Admissions committees know this and give limited value to these kinds of letters
- Get work experience with profs to get good references!
- Do the work and do it well because word of mouth goes a long way
Academic Careers

- **MSc – Epidemiology**
  - Research assistant or study/project coordinator
  - Work for one or more profs on their research projects
  - Task-oriented, nitty-gritty work, some management responsibility for senior coordinators
  - Dependent on research budgets

- **MPH**
  - As above, but often linked to researchers who do public health-oriented research

- **MSc – Biostatistics**
  - Data analyst
  - Works for one or more profs on their research projects
  - Good analysts are in high demand
  - In large research centres, such a person could oversee a group of analysts
 Academic Careers

- PhD – Epidemiology or Biostatistics
  - Faculty member
    - Apply for grants to run your own research studies
    - Work as a co-investigator on other profs’ studies
    - Teach and supervise students
    - Service (university committees, professional organizations, etc.)
  - RAs/coordinators/analysts
    - Some PhDs do not become faculty members, but instead work as RAs/coordinators/analysts
    - Many IMGs also do these jobs
Postdoctoral fellowships

- Only useful if you get a PhD and want to work as a faculty member
- PDFs are usually offered by individual faculty members who typically have large research programs and lots of funding
- You work for the faculty member on one or more projects, but you are given the chance to start developing your own research program
- A good PDF supervisor will treat you as an equal and give you a chance to publish
- The supervisor might give you a chance to teach part or all of their courses (applicants for faculty positions, even entry level, will have to demonstrate some teaching experience)
- Good supervisors will help you network and help you kick-start your career
- Most PDFs last for 1 to 2 years
- Some fellows cannot find faculty positions after their postdocs, so they jump from postdoc to postdoc (3-4 postdocs is sadly common)
- Avoid being a serial postdoc!
Public Sector Careers

• Federal government
  • Departments: Public Health Agency of Canada, Health Canada, National Defence

• Provincial government
  • Ministry of Health, Public Health, agencies e.g. Cancer, Health Quality

• Regional health
  • Local health integration network (Ontario), health authorities

• Public health (municipal) – mostly Masters degree level
  • Public health units
Public Sector Careers

- Educational requirements – mostly Masters level; senior scientists have PhDs
- Internships and practicum placements (mostly unpaid)
- Paid student work programs e.g. Federal Student Work Experience Program, Field Epidemiology Program
- Application process: competitions; skills and previous work experience assessed (essential qualifications)
- Strong references from professors and employers
Not-for-profit Sector Careers

- Type of sub-industries:
  - Health care delivery institutions e.g. hospitals, clinics/centres
  - Health charities, societies, and associations e.g. CMA, Can Diabetes Association,
  - Research institutes e.g. CIHI, EBRI, OHRI
  - Think tanks (Private, NFP) e.g. the Conference Board of Canada, C.D. Howe, IRPP, Fraser Institute, CCPA

- Qualifications:
  - mix of Masters and PhD-level education (leadership positions)
  - Previous work experience a must
  - Working in teams and strong communication skills essential
  - Business mindset (think tanks)
  - Strong references from employers

- Check for internships
Private Industry Careers

- Types of sub-industries:
  - Pharmaceuticals e.g. Pfizer, GSK, Merck, Johnson & Johnson
  - Technology e.g. Medtronic, Janssen (J&J)
  - Consultancy e.g. IMS Health

- Qualifications:
  - mix of Masters and PhD-level education
  - Previous work experience a must
  - Working in teams and strong communication skills essential
  - Business mindset
  - Strong references from employers

- Check for internships
Job Search

- [www.cseb.ca/career-opportunities/](http://www.cseb.ca/career-opportunities/)
- [www.cseb.ca/job_search/](http://www.cseb.ca/job_search/)
- [http://www.epimonitor.net/JobBank.htm](http://www.epimonitor.net/JobBank.htm)

- Get on jobs notifications lists e.g. CIHI, OPHE bulletin, CSEB membership list
The Canadian Society for Epidemiology & Biostatistics

About CSEB

- Canadian organization of professionals, founded in 1990, for the purpose of fostering epidemiological and biostatistical research and practice in Canada.
- Facilitates networking among epidemiologists and biostatisticians across Canada.
- Promotes the professions of epidemiology and biostatistics at all levels of government, academia and industry, and engages with counterparts in the USA and internationally.
- Assists faculties and schools of medicine and public health to improve training.
- Bridges both the research, practice, and policy aspects of our disciplines through close collaboration with other groups:
  - Public Health Agency of Canada (PHAC)
  - Association of Public Health Epidemiologists in Ontario (APHEO)
  - Saskatchewan Epidemiology Association (SEA)
  - Statistical Society of Canada (SSC)
  - Canadian Association of Veterinary Epidemiology and Preventive Medicine (CAVEPM)
  - International Joint Policy Committee – Societies of Epidemiology
THE UNIVERSITY OF MANITOBA, WINNIPEG

• Wednesday, June 8th to Friday, June 10th.
• Will be partnering with the Canadian Student Health Research Forum (CSHRF).
• June 8-10: CSEB unique events (workshops, student posters and presentations, dinner) on June 8th and June 10th.
• June 9: joining CSHRF conference for their symposium (theme will be Epidemiology/Biostatistics.
• Student Travel Awards will be made available (CIHR & CSEB).
• For more info: contact csebwpg2016@gmail.com or visit http://umanitoba.ca/outreach/conferences/cseb2016/
For More Information

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moremus@uwaterloo.ca

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