



## **CANSSI Distinguished Postdoctoral Fellowship: Faculty Project Proposal Form**

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### **Estimating COVID-19 Prevalence in Homeless Populations**

**Date of submission:** October 14<sup>th</sup>, 2021

#### **Name, affiliation, and contact information for the supervisor and co-supervisor**

Dr. Laura Cowen

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#### **Abstract**

The project will entail developing novel statistical Bayesian models for estimating the prevalence of COVID-19 in hidden or marginalized populations. Specifically, Electronic Health Records (EHR), will be used to obtain estimates for COVID-19 prevalence in the homeless populations on Vancouver Island. The successful candidate would develop capture-recapture methods, methods of inference, and address problems in the data provided.

#### **Interdisciplinary/applied experience**

The postdoctoral fellow will divide their time between Dr. Cowen's lab at the University of Victoria and Dr. Brown's group at the Centre for Global Health Research (CGHR) at St. Michael's Hospital in Toronto. While in Toronto they will have an appointment at the University of Toronto's Department of Statistical Sciences.

While at CGHR they will be embedded in the Ab-C study team, which includes clinicians and epidemiologists collecting and analyzing serosurvey data. They will become involved in the data analysis for one or more applied research projects, which may not be closely related to the postdoctoral work but will provide applied Biostatistical experience.



During their time in Victoria, they will meet regularly with collaborators at Island Health. They will become familiar with how the data are collected and managed and develop R code for manipulating these large data files. They will work with the epidemiological collaborators to refine research questions, define appropriate analyses, and use the methodology developed to produce estimates of use to planners and health practitioners. A publication for a health journal will be prepared, with the postdoctoral fellow having primary responsibility for the ‘methods’ and ‘results’ sections. They will also become involved in Cowen’s ecological statistics network, working on applications beyond COVID-19.

### **Teaching/training/education**

In the first year the postdoctoral fellow will teach a one-semester course in the Department of Statistical Sciences in Toronto as a sessional lecturer. The Department has several ways in which sessional lecturers are supported, including weekly meetings of course instructors. Toronto has many strong undergraduate students wishing to do project courses and summer research assistantships, and a shortage of faculty able to supervise them. The postdoc will provide day-to-day supervision for a project course, with Dr. Brown being the ‘official’ supervisor and providing guidance on the overall direction of the project.

In the second year at Victoria the postdoc will teach a further one-semester course in the University of Victoria’s undergraduate program. They will also develop a short module on population size estimation methods including capture-recapture and N-mixture models as part of the NSERC-funded “Statistical Methods for Managing Emerging Infectious Diseases” project. The module will be part of a for-credit course in infectious diseases to be taught at multiple universities. The postdoc will teach the module as a one-day short course at least once, either as a pre-conference short course or as an online course for the trainees in the NSERC network.

### **Mentoring of the postdoctoral fellow**

Drs. Brown and Cowen will jointly mentor the postdoctoral fellow, who will meet weekly with one or both supervisors. Dr. Brown’s group has a weekly lab meeting, when a trainee needs assistance on a particular topic a group member with knowledge in the relevant area is identified and the two arrange to meet separately. As part of this group the postdoc will find assistance from others and gain experience providing mentorship and support to their peers. The postdoc will also have an appointment at the University of Toronto and will interact with other early career researchers there.

In Victoria, the postdoc will have the opportunity to jointly supervise an undergraduate statistics student as a means of gaining experience training HQP. The postdoc will participate in Cowen’s lab meetings including EDI training sessions or Indigen Acumen training offered by UVic. The postdoc will be encouraged to attend at least one statistical conference per year (such as SSC or WNAR) for networking and knowledge mobilization opportunities. The trainee will also be asked to provide presentations to Island Health and thus will gain valuable communication skills presenting to diverse audiences. Cowen’s lab is attempting to broaden



collaborations with indigenous communities and is participating in pilot group learning how to establish community partnerships. The trainee would be exposed to this training as well.

**Proposed schedule for postdoctoral fellowship [0.5 pages]**

*Schedule for year 1:*

- Teach a one-semester course in the Department of Statistics at University of Toronto.
- Provide day-to-day supervision of undergraduate students for project course.

*Schedule for year 2:*

- Teach a one-semester course in the Department of Statistics at University of Victoria.
- Develop a short module on population size estimation methods including capture-recapture and N-mixture models.
- Teach the module as a one-day short course at least once, either as a pre-conference short course or as an online course for the trainees in the NSERC network.
- Supervise an undergraduate researcher (honours, NSERC USRA or equivalent)

**A list of qualifications of suitable candidates [0.25 pages]**

- PhD in Biostatistics or Statistics
- Proficient in R Programming Language
- Experience in Bayesian modelling and methods
- Experience with integer time series methods an asset