

Research Opportunity: Measuring Labour Shortages

Release Date: **16 December 2021**

Closing Date: **31 January 2022 (11:59pm PST)**

The [Labour Market Information Council](#) (LMIC) is seeking innovative solutions for real-time identification and tracking of labour shortages. To meet this objective, we are looking for advanced research projects focused on measurement frameworks, statistical analyses, and conceptual research on labour shortages and, where appropriate, skills shortages.

Who can apply:

- Researchers at accredited post-secondary institutions within Canada
- Other independent researchers in Canada

What recipients get:

- A \$7,500 stipend paid out during the course the research term (10-12 months)
- Access to restricted and proprietary data through the LMIC Data Hub, including record-level observations of online job postings provided by Vicinity Jobs (see [Data Resources](#) section below)
- Support reviewing and editing early research drafts and reviewing empirical analysis and coding, if needed
- Publication in LMIC's forthcoming working paper research series
- Freedom to adapt your research and seek publication in academic journals or other outlets of your choice

What is expected of you:

- Ongoing communication with the LMIC editorial team, including regular updates, outlines, drafts and other materials as agreed to in advance
- Three final deliverables are expected:
 - A rigorous research paper delivered within the specified timeframe
 - Code files and intermediate data files
 - Final data, charts and any other empirical outputs
- Participation in a workshop with other researchers working on this project to present your preliminary work. The workshop is planned for September 2022.
- Participation in a final workshop in early 2023 hosted by the Canadian Labour Economics Forum (CLEF) to present research findings and final deliverables.

Background

While labour shortages are broadly understood as a lack of labour supply relative to demand, the concept lacks conceptual and empirical clarity. In particular, current methods and indicators for identifying and measuring shortages in real time are inadequate. This significantly hinders policymakers and researchers' ability to track and respond to the challenges posed by labour shortages in a data driven, objective manner.

As Canadian labour markets recover from COVID-19, media stories and other anecdotal evidence of labour shortages have become increasingly prominent, prompting calls for policy interventions. LMIC has started exploring this topic from a conceptual point of view, [first by distinguishing labour shortages from skills shortages and skills mismatches](#) and then by exploring the limitations of existing data sources to identify and measure shortages, in particular [skills shortages related to bilingual workers](#). While conceptual work remains important, there is a need for advanced research to: 1) improve existing empirical methods for identifying and measuring shortages in real-time and at local levels; and, 2) articulate the real consequences of shortages for Canada across a range of economic and social dimensions.

To that end, researchers are invited to submit proposals to the *Call for Proposals – Research on Measuring Labour Shortages* in accordance with the terms, conditions, and proposal response format as specified in this document.

By responding to this call for proposals, each researcher thereby acknowledges that they have reviewed the process, terms, conditions, and reserved rights contained in this document, and have voluntarily chosen to participate subject to those procedures, terms, conditions, and reserved rights.

Scope of research

The length of the research project will be ten to twelve months, allowing for researcher discretion and best fit based on the area of research selected and structure of the research proposal. Reasonable extensions to the timeline may be granted by LMIC.

Selected research projects can be driven by any domain- or discipline-specific research questions including, but not limited to, economics, data science, career development, and public policy. There are two major areas of research into which most projects will fall:

- 1) Empirical research focused on improving existing methods and/or developing new indicators for identifying and measuring shortages in real time, such as
 - a. Addressing current challenges faced in identifying shortages in real time and at local levels.
 - b. Developing robust indicators that allow for objective identification and quantification of labour shortages within a specific sector or occupation.

- c. Employing innovative strategies, such as machine learning and natural language processing (NLP), to identify and measure shortages (and surpluses) based on current and historic labour market and economic conditions.
 - d. Leveraging present-day anecdotal data on shortages to develop a process for objectively identifying the existence (or lack thereof) of labour shortages in specific regions, sectors, or occupations.
- 2) Conceptual research focused on defining labour shortages and demonstrating their measurable impacts (positive and/or negative) in the Canadian economy, such as
- a. Detailing the consequences of shortages (e.g., What kinds of shortages have negative consequences? Under what circumstances should shortages be addressed through policy intervention?)
 - b. Exploring whether existing data can deliver reliable measures of shortages, even if it is determined that such measures cannot be created.

All projects should focus on practical applications for measuring labour shortages and surpluses in as close to real time as possible.

Application Process

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Send the research proposal titled "ResearcherName – LabourShortages - proposal" by end of day 31 January 2022 to lorena.camargo@lmic-cimt.ca

The application package should include:

1. Research proposal (max 10 pages)
2. Project workplan/timeline with expected milestones to allow for LMIC validation / feedback (minimum two milestone / validation dates); and,
3. Resume or Curriculum Vitae (max 4 pages)

The submission should be sent as separate documents in PDF format.

Any questions regarding the call for proposals and application process can be directed to Lorena Camargo at lorena.camargo@lmic-cimt.ca no later than 24 January 2022, 11:59pm PST. Questions received beyond this date will not be answered.

Submissions will be received until end of day 31 January 2022, 11:59pm PST. Submissions received beyond this date will not be valid for participation in this call for proposals.

Research Proposal

The research proposal should include the following sections:

1. Title

A tentative title for the intended research.

2. Abstract

The proposal should include a concise statement of the intended research. This section lays out the problem examined or the focal question that the project attempts to address.

3. Research Context

In this section, a brief overview of the general area of study within which the proposed research falls, summarizing the current state of knowledge and recent debates on the topic is necessary. This section should clearly lay out the context in which the research is being conducted and serves to demonstrate familiarity within the field.

4. Research Questions

This section should set out the central aims and questions that will guide the research. The questions should be narrow and feasible in nature to allow for research and analysis to culminate within an eight to ten months timeline.

Keep in mind that the proposal should explain the intended approach to answering the key research questions. For this research proposal, the focus is around empirical methods- the approaches should be explained as best as possible.

5. Research Methods

The proposal should outline the research methods and approaches selected for the area and topic related to labour shortages. This section should include initial data sources in the research process.

6. Significance of Research

This section should demonstrate the originality of the intended research, clearly stating the value-add to the field. How will the research, development of methods and indicators, approaches, and findings add to the current state of knowledge in the field. Why is this research and its related results timely for Canadian society, and what are its implications in economic and policy realms?

7. Bibliography

In this section, include a short bibliography identifying the most relevant works that will initially guide the work.

Researchers should ensure that the length of the proposal should be sufficient to adequately describe the required information within the specified sections.

Selection Process- Schedule of Events

An evaluation team consisting of LMI stakeholders, partners, and LMIC staff will review submissions.

Call for Research Proposal Opens	16 December 2021
Opportunity to Send in Questions Closes	24 January 2022, 11:59pm PST
Call for Research Proposals Closes	31 January 2022, 11:59pm PST
Evaluation period. LMIC may contact researchers to schedule interviews, if deemed necessary.	1 February 2022 to 4 March 2022
Research Proposal Selected and initial funds awarded	7 March 2022
Projected Research Kick-Off Date	Early March 2022.

Awards

Selected researchers will be awarded a total of \$7,500. The funds will be released throughout various stages of the project cycle. The initial \$2,500 will be awarded upon selection, \$2,500 following the first workshop presentation in September 2022, and the final \$2,500 once the research report, and accompanying data and code have been received and validated by LMIC.

LMIC will review drafts at various stages of the process and will send the report for external review. The final payment will be made assuming the research paper is revised in accordance with feedback provided at each stage. LMIC reserves the right to, at any time, reject the research project and will not be held liable outstanding disbursements.

Assessment Criteria

LMIC will evaluate and rank all proposals against the following criteria:

- 1) The application package is received before the close of the Call for Proposals
- 2) The research question relates clearly to the major areas and/or sub-sections outlined in the Scope of Research above
- 3) The research proposal is well articulated, and states clearly research methods involved
- 4) The potential of the project to inform the development of practical metrics to identify and track labour and/or skills shortages that can be used by researchers, policymakers and decisionmakers

Data Access

LMIC will help facilitate access to public data as needed and provide access to Vicinity Jobs' proprietary data (see [Data Resources](#) below).

Note for researchers seeking direct access to the Vicinity Jobs API, a confidentiality agreement must be signed between the researcher and Vicinity Jobs. This agreement will indicate that Vicinity Jobs data cannot be shared with third parties, can only be used for the purpose of this research project, and will be deleted from the proponent's computers immediately after this project is completed. Future or ongoing access to Vicinity Jobs' data can be determined on a case-by-case basis.

Data Resources

This call provides selected researchers access to unique, proprietary data.

Online Job Posting Data

The opportunity allows for access to raw data provided by LMIC's partner, Vicinity Jobs. Vicinity Jobs is a Big Data analytics firm specializing in the collection and cleaning of near-real time online job posting (OJP) data from across Canada. LMIC can provide API access to either pre-processed record-level data or fully processed aggregated data. The selected researcher can propose either or both solutions.

Record level observations of online job postings provided by Vicinity Jobs are cleaned and deduplicated. Each job posting is identified with a source webpage, date posted or found and is linked, wherever possible, to specific geographies across Canada, occupations (1 and 4-digit NOC codes), sectors (2- or 6-digit NAICS codes), education level requirements, employer names and offered wages (where available). In addition, each job posting is associated with "work requirements" (of which one group is "skills") and "certifications". A job posting might be associated with zero, one or many work requirements and/or certifications.

A complete and detailed description can be provided to potential applicants upon request and validation by LMIC and Vicinity Jobs.

Raw, unprocessed data are obtained by LMIC as paginated JSON files which are on the order of 200 Mb/month.

Standard Data Access

Other data that the awarded researcher will have access to are those accessed through the LMIC Data Hub - an open cloud-based data repository that merges different data sources together, cleans, and provides an easy-to-use API for researchers and interested stakeholders. As of October 2021, data from three providers are included in the LMIC Data hub: **Statistics Canada, Employment and Social Development Canada (ESDC)** and **Vicinity Jobs**. Statistics Canada data is further segmented by one of three access points: CODR, RTRA and Custom Tabulations. Currently only CODR and RTRA data are available in the Hub. Table 1 below summarizes the key data sources for the Data Hub.

If required, LMiC will work to support researchers in accessing custom LFS cross tabulations from Statistics Canada directly or through the RTRA system.

Table 1: Key Datasets Ingested in to LMiC Data Hub v0.1

Data Provider	Access Point	Ingest type	Update Frequency	Comments
Statistics Canada	CODR	Drop	Monthly	13 CODR tables ingested*. Most, but not all, categories from these 13 available.
Statistics Canada	RTRA	Drop	Monthly	Labour force status and average actual wage information by NOC, NAICS and geographic regions
<i>Statistics Canada</i>	<i>Custom</i>	<i>Drop</i>	<i>Annual/Monthly</i>	<i>Pending finalization</i>
ESDC	COPS Webpage	Drop	Annual	Currently only forecasted employment level by occupation and industry available
Vicinity Jobs	API	Automated	Weekly	Aggregate observations (25+) of job postings and work requirements