

Intelligence MEMOS



From: David A. Green, Gaëlle Simard-Duplain, and Henry E. Siu
To: Policymakers across Canada
Date: June 2, 2020
Re: **A COVID ASSESSMENT TOOL TO GUIDE THE OPENING AND CLOSING OF SECTORS**

Since early May, the number of new Canadian COVID cases and – importantly – the number of COVID-related deaths, is on a downward trajectory. Now, public attention and policy concern has turned to the relaxation of public health measures, and the staged renormalization of economic activity.

The VSE COVID Risk/Reward Assessment [Tool](#) fills the void in information and analysis needed for evidence-based economic re-opening strategies. Based on 300 occupations across 100 industries, it can also serve as a common knowledge base upon which federal and provincial guidelines are formulated.

The tool is constructed at the provincial level. It allows policymakers to see the risks and benefits of re-starting various sectors of a province's economy (or, if needed, re-introduction of closures or restrictions if a second wave emerges.) In addition, it lets policymakers compare occupations in terms of viral transmission risk, allowing the identification, within sectors, of areas that require particular attention.

In terms of benefits to re-opening, sectors can be compared along three dimensions.

The first is simply the size, in terms of employment or GDP.

The second is sectoral employment losses from February to April. (The tool also allows users to focus on job loss in the bottom quartile of the wage distribution where the effects of recessions, this one included, are disproportionately borne.)

Finally, sectors can be organized by their centrality: how essential they are to the functioning of all other sectors of the economy.

The VSE Risk Index captures the risk of viral transmission faced by returning workers in a given occupation. The risk scores of individual occupations can then be aggregated to produce the risk score of various sectors.

But the index also captures life outside of work.

This unique and important feature combines occupational characteristics – proximity or close contact with others, frequency of personal contacts, exposure to diseases or infections, interaction with the public, and outdoor work – and worker characteristics – commuting on public transit, working from home, living in a crowded dwelling, and living with a health care worker – to form a comprehensive measure of risk.

The variables included in the index were determined through discussions with experts at the BC Centre for Disease Control and the Institut national de santé publique du Québec (INSPQ). Since currently available data does not allow us to directly observe SARS-CoV-2 transmission risk, a key issue is determining how to aggregate the various occupational and worker characteristics into a single index. To the extent that these characteristic measures vary together, they can be thought of as capturing changes in an underlying risk of transmission index. We exploit this intuition to weigh occupational and worker characteristics in the construction of the VSE Risk Index, via a statistical technique called factor analysis. To validate our approach, we use a decades worth of flu data to confirm that our index is related to influenza viral illness, though a different virus from SARS-CoV-2.

As an example of how the assessment tool can be used, a sector with high reward to re-opening is accommodation and food services. Hotels and restaurants have suffered large losses. Within restaurants and food service establishments, the riskiest job is perhaps easily overlooked: supervisors/managers. That is because this person is in constant, close contact with kitchen staff, wait staff, and customers.

Another example worth noting: hairstylists/barbers. Hair salons and personal services are being re-opened in many jurisdictions. But the nature of their work makes this occupation among the riskiest outside of those in healthcare. This is further amplified because, at least in BC, hairstylists and barbers are more likely than others to live with someone over the age of 60; the consequences of COVID are more severe for the aged. Such considerations can only be learned through evidence-based analysis, such as that provided by the VSE COVID Risk/Reward Assessment Tool.

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Figure: Sectors and Major Occupation Groups

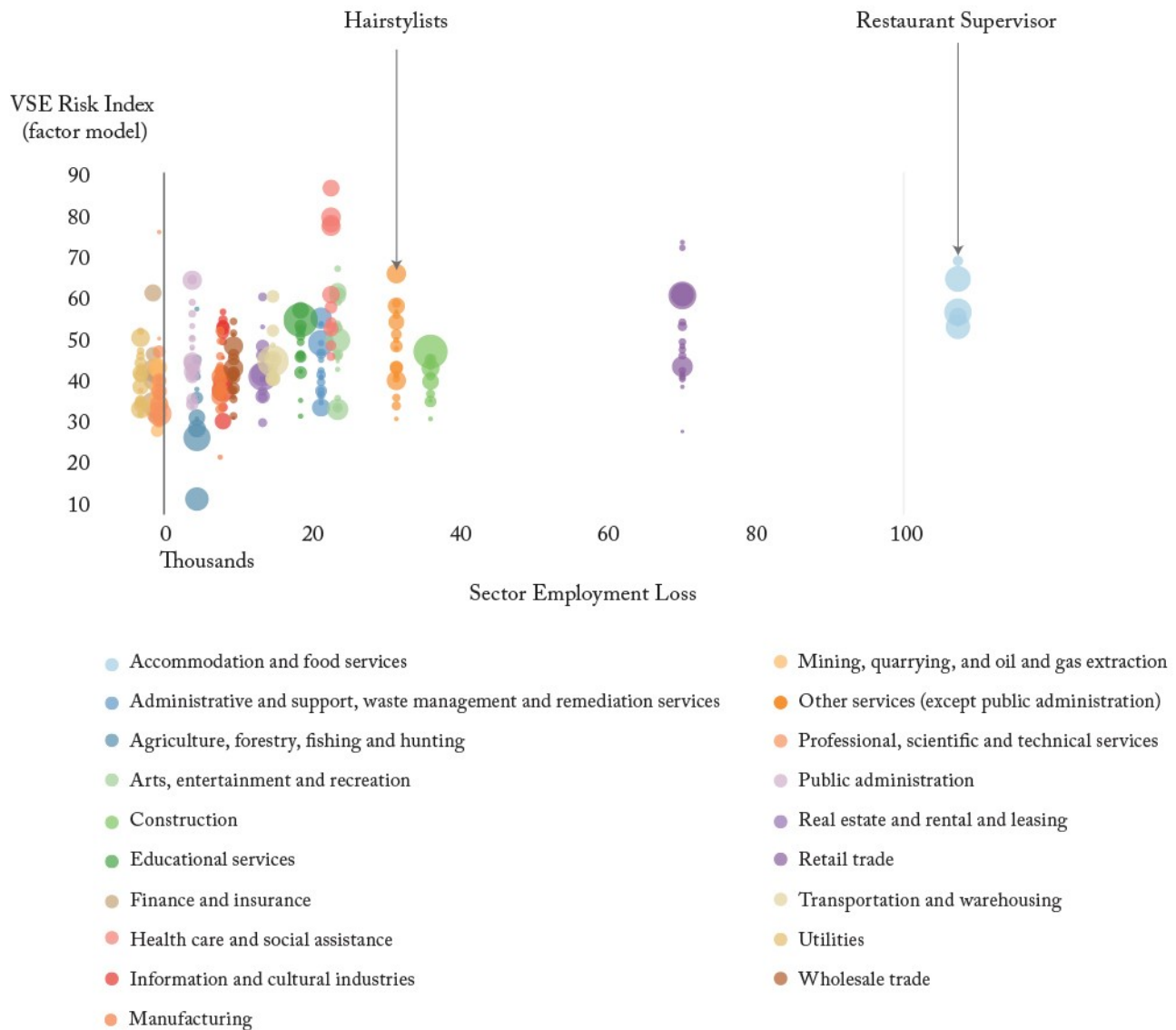


Figure showing occupations' viral transmission risk across sectors of the BC economy. Taken from the VSE COVID Risk/Reward Assessment Tool available at covid19.economics.ubc.ca.

The assessment tool is the result of a collaborative effort of researchers affiliated with UBC's Vancouver School of Economics, École des sciences de la gestion de l'UQAM, HEC Montréal, Dalhousie University, and Analysis Group. Réka Gustafson, the head of the BCCDC, requested this work well before others were pursuing the unintended economic consequences of the virus and policies related to it. She, along with the INSPQ, also provided valuable input into the construction of the VSE Risk Index. The tool is built on data from Statistics Canada, who found timely and innovative ways to provide data access in the midst of COVID-related constraints. The Labour Market Information Council (LMIC) provided financial support to make the VSE COVID Risk/Reward Assessment Tool available for all provinces.