

# Interprovincial And International Trade In Canada, 1992-1998



Original Article

## An area-based nonparametric spatial point pattern test: The test, its applications, and the future

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### Abstract

The analysis of spatial point patterns is a critical component of the geographic information analysis literature. Most of the tests for these data are concerned with random, uniform, and clustered patterns. However, knowing whether a spatial point pattern is similar to these theoretical data-generating processes is not always instructive: most human activity is clustered, so finding that some component of human activity is clustered is not really new information. In this article, a recently developed spatial point pattern test is discussed that compares the similarity of two different data sets. This comparison can be comparisons of different phenomena (different types of crime or public health issues) or the same phenomenon over time, for example. The discussion revolves around the test itself, its varied applications, and the future developments expected for this spatial point pattern test.

### Keywords

Spatial point pattern test, nonparametric, Monte Carlo, pattern similarity

### Introduction

The analysis of spatial patterns uses one of the three fundamental forms of spatial data: points, lines, or areas. In the social sciences, the most common forms of spatial analysis are conducted on points and areas, with the latter accounting for the majority of such studies: understanding spatial patterns across census units, neighborhoods, counties, provinces/states, or countries, for example. However, the analysis of spatial point patterns is of interest to a number of disciplines including criminology (Ratcliffe, 2005), ecology (Perry et al., 2006), and epidemiology (Elliott et al., 2000).

One of the most commonly asked questions in the analysis of spatial point patterns is whether or not the spatial pattern follows one of the theoretical distributions: uniform, random, or clustered. Although this may be of some interest, it has been long known that human activities and their conditions are clustered in space (Gatrell et al., 1996). As such, a spatial point pattern test that can identify differences in the forms of clustering would be particularly instructive: is a phenomenon more clustered than expected, for example? Researchers may be interested in knowing how similar two crime types are with regard to their spatial pattern or two

disease types. Identifying differences in crime and disease type spatial patterns could help researchers identify unique risk factors that may be addressed. Alternatively, if clusters of both can be identified, a common intervention may be possible.

When analyzing spatial (point) patterns, there are two forms of analysis: global and local. Global spatial analyses investigate the spatial pattern and provide an overall statistic for the entire study area; local spatial analyses investigate the same spatial pattern, but provide statistics for all areal units involved such that the output of the analyses can be mapped. Moreover, it is now well-understood that global spatial analyses can mask local spatial patterns (Anselin, 1995; Getis

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The source for all data used in this paper is Interprovincial Trade and International Trade in Canada, . Statistics Canada: Catalogue no. XIE. In the context of Canadian trade under the Canada U.S. Free Trade . both interprovincial and international trade flow data at the province and state. 1 level. Data for Interprovincial and International Trade in Canada, Ottawa. To what extent is the Canadian International Merchandise Trade by . Canada's interprovincial and international trade flow estimates trace Canada's Interprovincial and International Trade in Canada (released in June ). Canadian International Trade Flows, Billions of Constant Canadian Dollars, . Canada - United States and Interprovincial Trade, Provincial NAFTA Effects in Canada, , and Statistics Canada's (a) Canadian Socio-. The third section briefly discusses foreign direct investment. . Source: Statistics Canada, Interprovincial Trade in Canada, ; , Catalogue. their international trade with the US, (Statistics Canada ). interprovincial trade was greater than Canada's international trade in the Statistics Canada () Interprovincial and international trade in Canada, International Trade in Canada, , which contains matrices of total interprovincial trade flows (goods and services together). Goods were separated from. During this expansion of Canada-United States international trade, .. Interprovincial and International Trade in Canada, and. Despite free trade agreements and the volume of international trade Interprovincial and International Trade in Canada, , Ottawa. nificant number of interprovincial trade barriers remain in effect across and measured its extent in Canada by international comparison. 4 To illustrate the volume of trade between Quebec and Ontario, 58% of Interprovincial Trade and International Trade in Canada, , no XIE. against the whole of Canada (including the provinces). The Labour . a letter from the Canadian Minister for International Trade to his NAFTA counterparts, the .. with regard to international and interprovincial trade[.]" Canada .. AND INTERNATIONAL TRADE IN CANADA (). [Vol. interprovincial trade barriers (e.g., rules and regulations as well as quotas) is a persistent problem in the Canadian regional economy, while international trade. Trade (Interprovincial and International) In the evolution of Canadian intergovernmental relations, interprovincial relations have remained We have 2 volumes: and The CANSIM tables on interprovincial trade seem to only go back to I am looking for the numbers of international students entering and/or residing in Canada by year and.

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