

# The Map-Maker's Baptism by Fire Experiences with Creating an Alumni Map

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Image source: Ryerson University's Image Bank

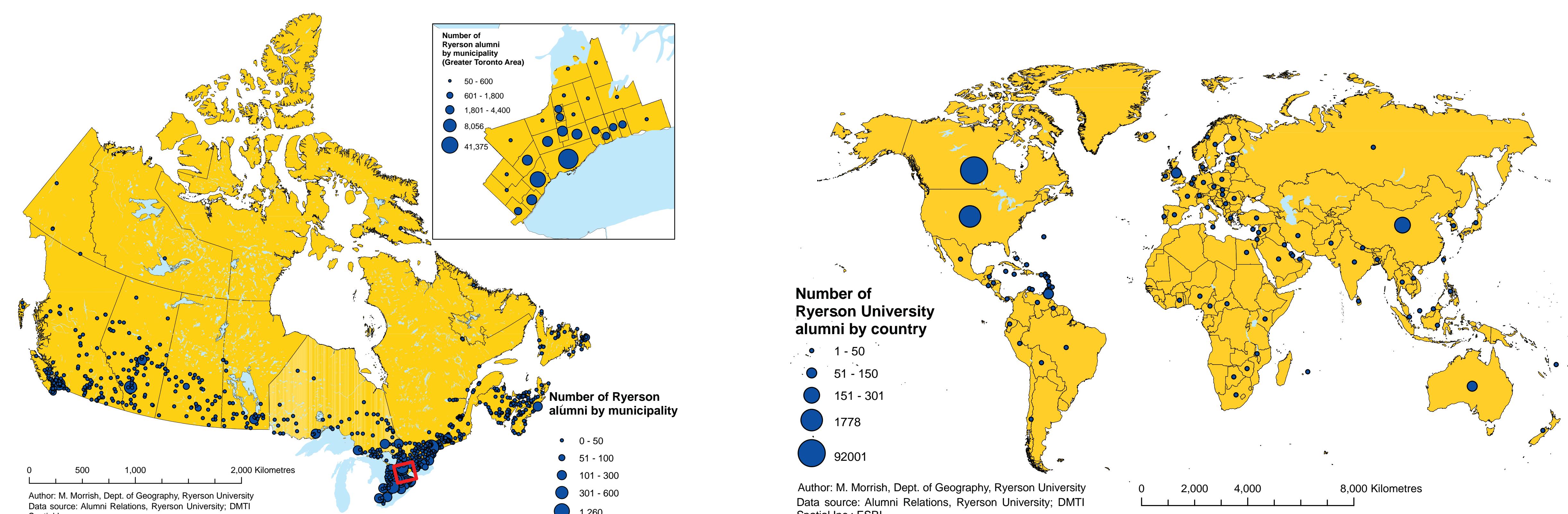
## Abstract

Maintaining a meaningful relationship with alumni is an increasingly sophisticated endeavour for higher education institutions. To visualize the geographic distribution of its alumni, Ryerson's University Advancement asked us to produce a world map and a map of Canada showing the 90,000 alumni for whom a residential location was known. To protect the privacy of the alumni community, anonymized records were geo-coded by postal code, and then aggregated to municipalities within Canada, and to countries for the world map. These counts were mapped as proportional circles.

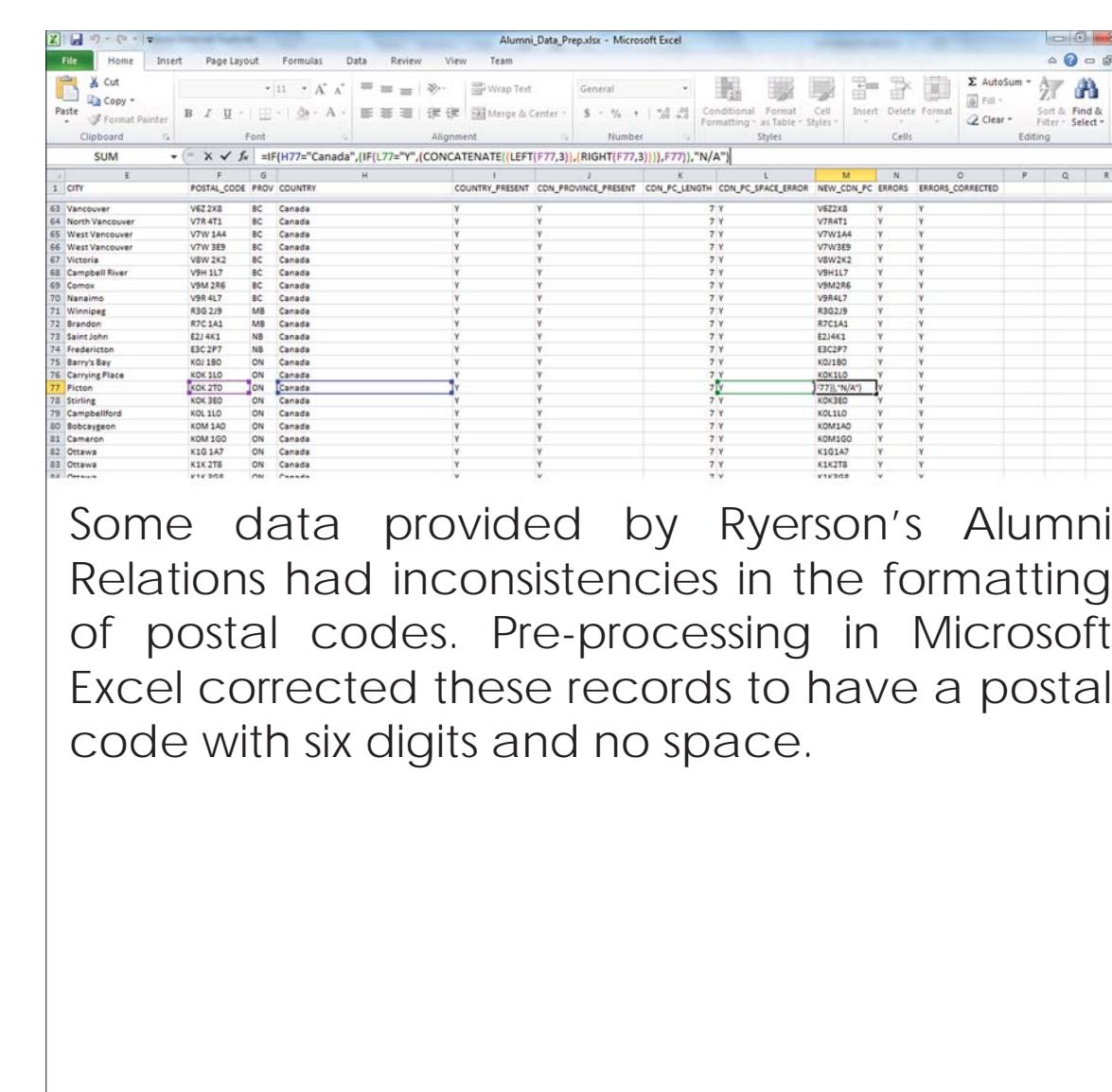
Several software tools and datasets used in the project introduced unique obstacles in the production of these maps. Microsoft Excel and Access applications provided the tools required to correct, pre-process and consolidate the non-spatial data, although the older Excel 2003 version could not handle the given number of records. The non-spatial and spatial join operations in ESRI's ArcMap using a point-based, national postal code dataset of approximately 1.2 million records could not be completed in a work day. This computer performance issue was overcome by eliminating redundancies in the data and partitioning the national into provincial datasets. Regional municipality boundaries extending into water bodies resulted in thematic symbols requiring manual relocation to appropriate locations on land. Finally, not enough information was obtained in order to adapt colour schemes, font families and sizes, or labels to the needs of the client.

This hands-on, start-to-finish project provided a unique learning opportunity about the challenges as well as ultimate success of real-world map-making.

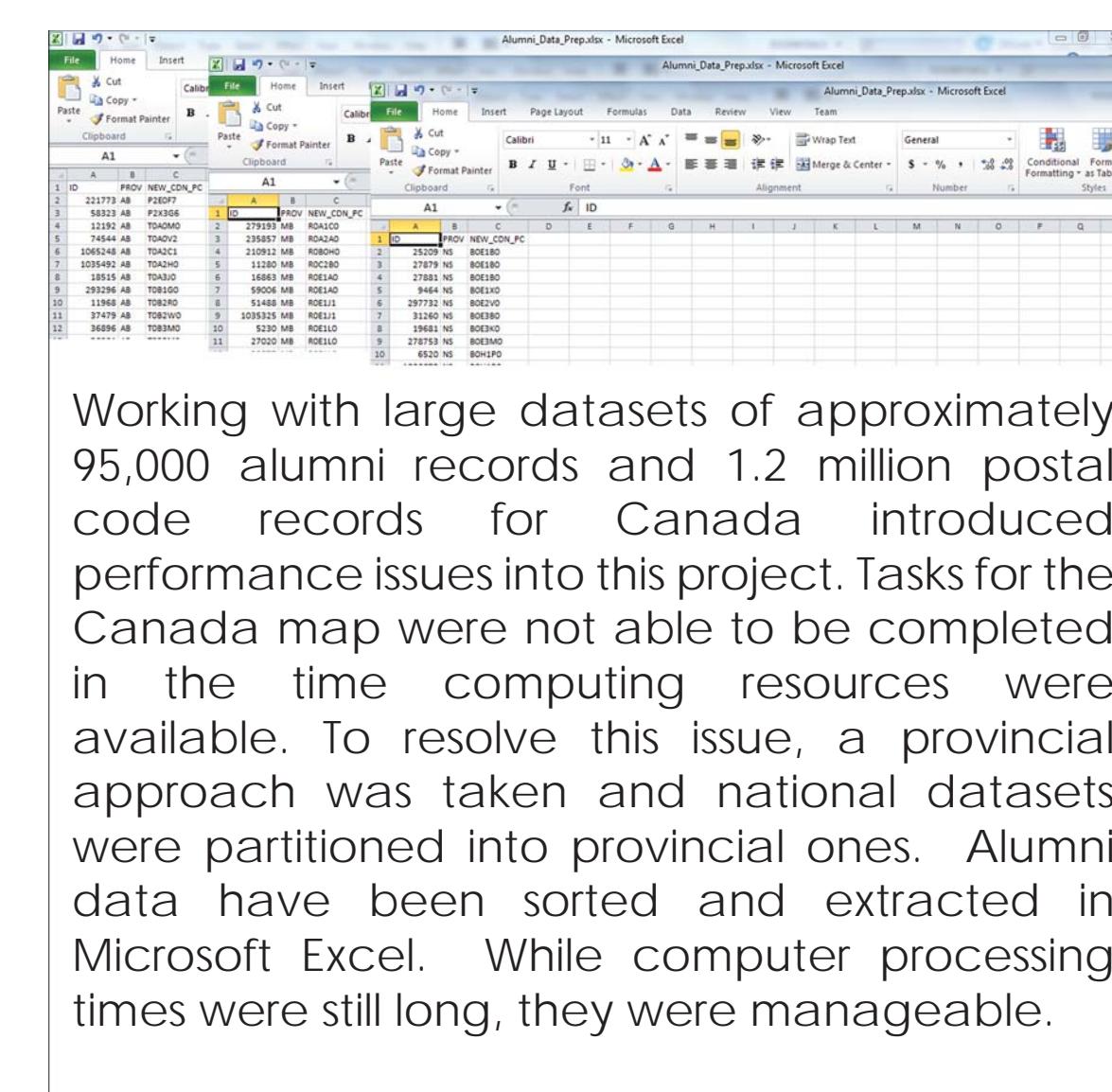
## Locations of Ryerson University Alumni in The Greater Toronto Area, Canada and the World



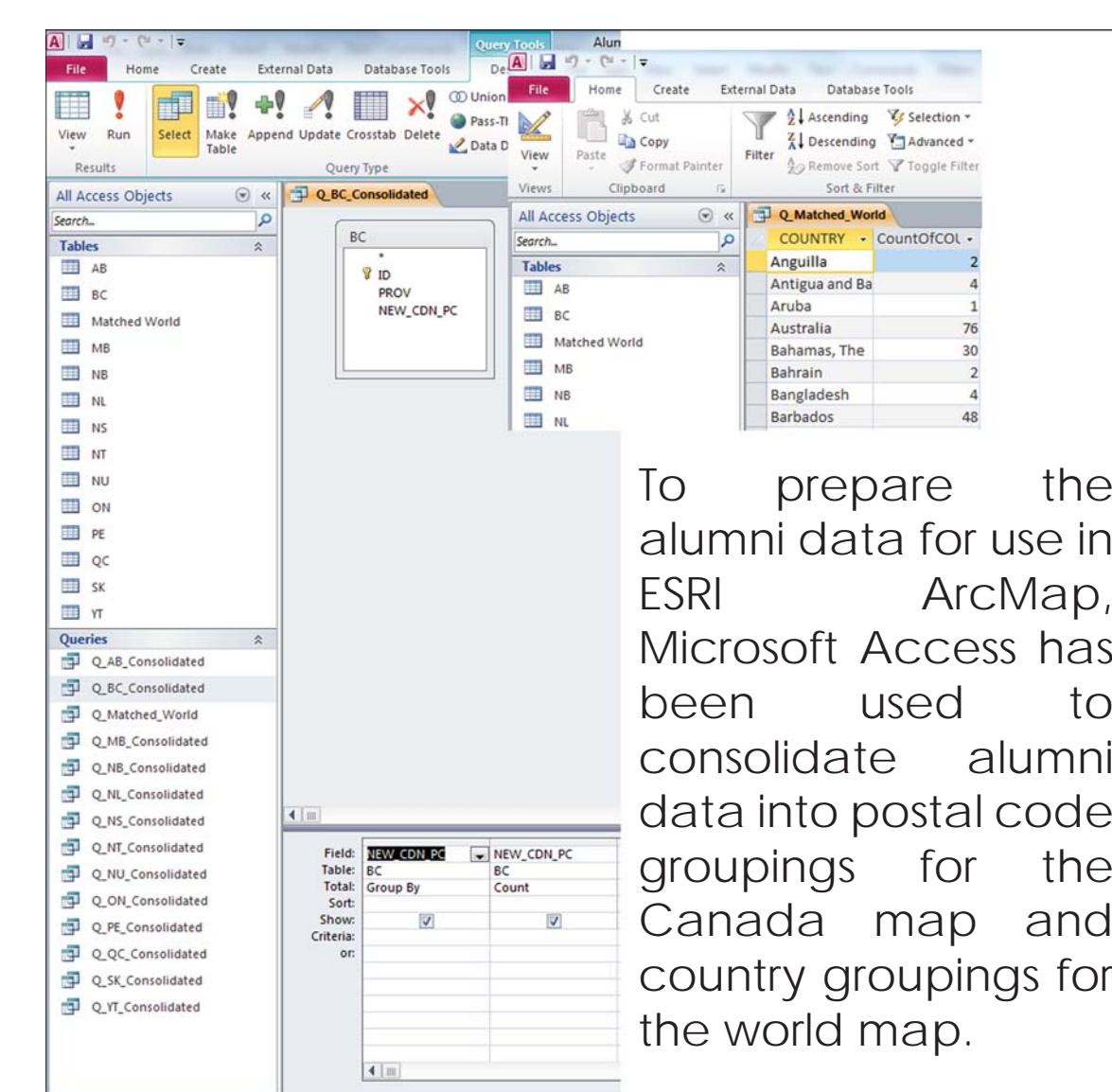
## Project Issues and Solutions



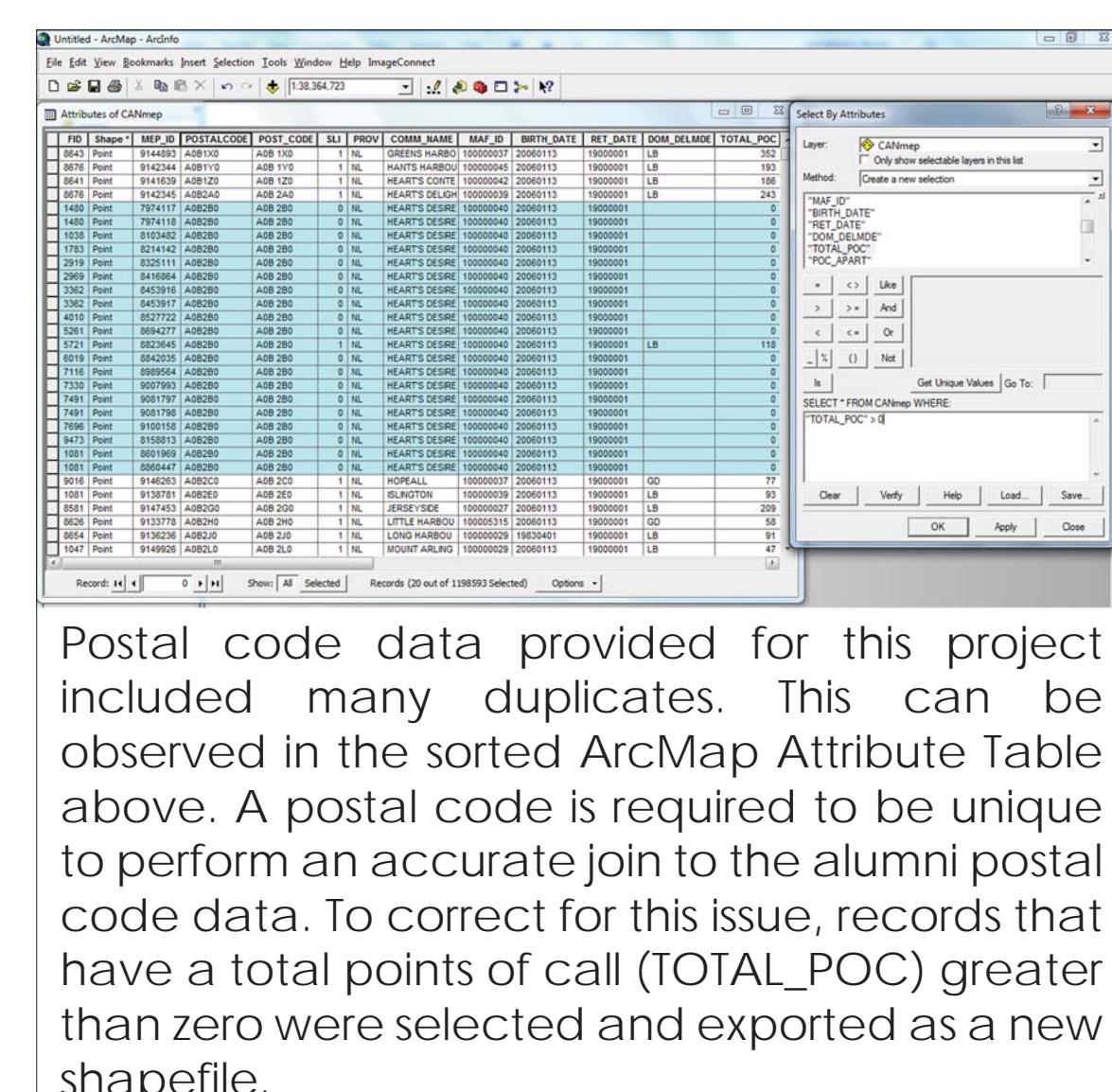
Some data provided by Ryerson's Alumni Relations had inconsistencies in the formatting of postal codes. Pre-processing in Microsoft Excel corrected these records to have a postal code with six digits and no space.



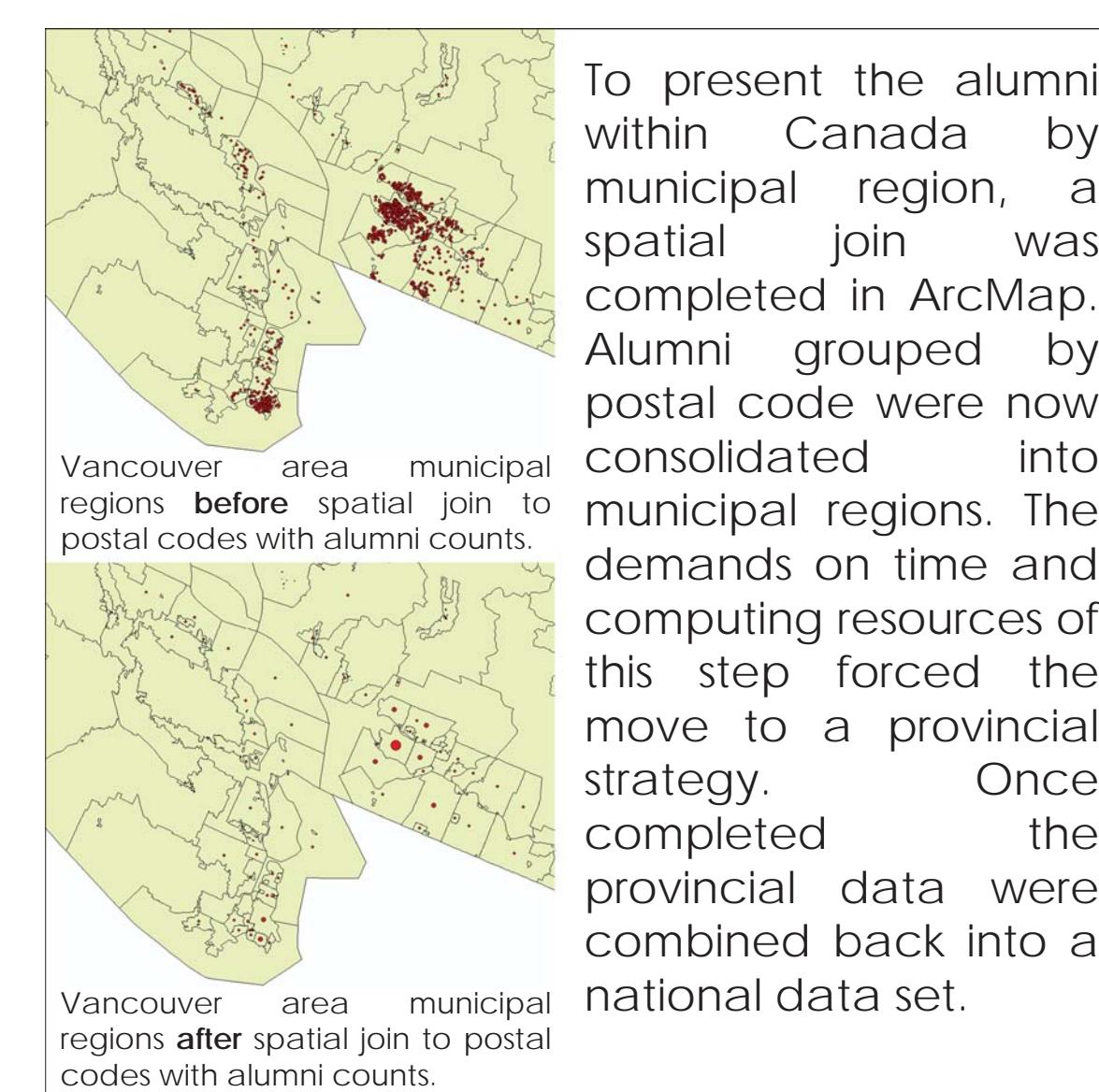
Working with large datasets of approximately 95,000 alumni records and 1.2 million postal code records for Canada introduced performance issues into this project. Tasks for the Canada map were not able to be completed in the time computing resources were available. To resolve this issue, a provincial approach was taken and national datasets were partitioned into provincial ones. Alumni data have been sorted and extracted in Microsoft Excel. While computer processing times were still long, they were manageable.



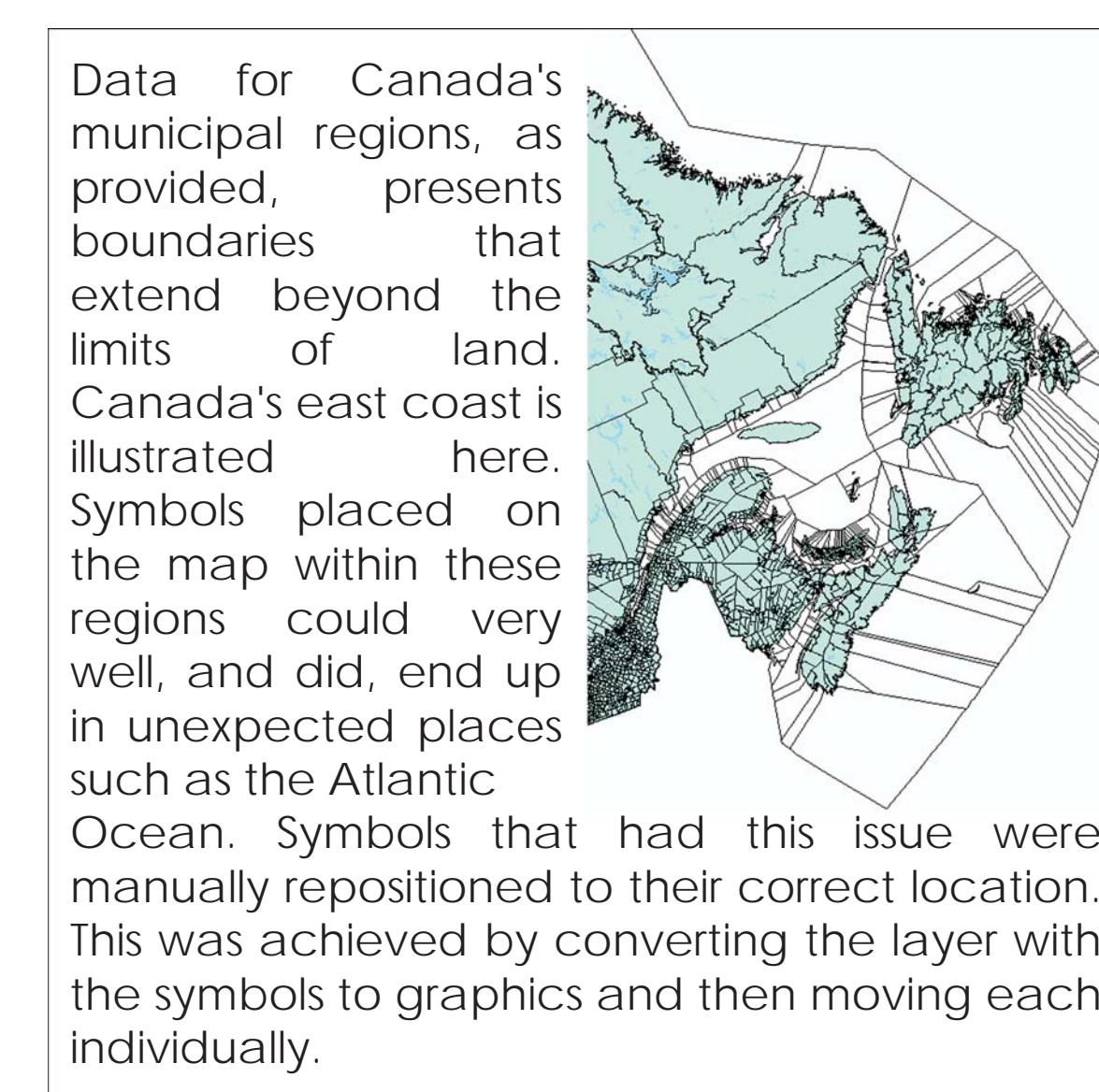
To prepare the alumni data for use in ESRI ArcMap, Microsoft Access has been used to consolidate alumni data into postal code groupings for the Canada map and country groupings for the world map.



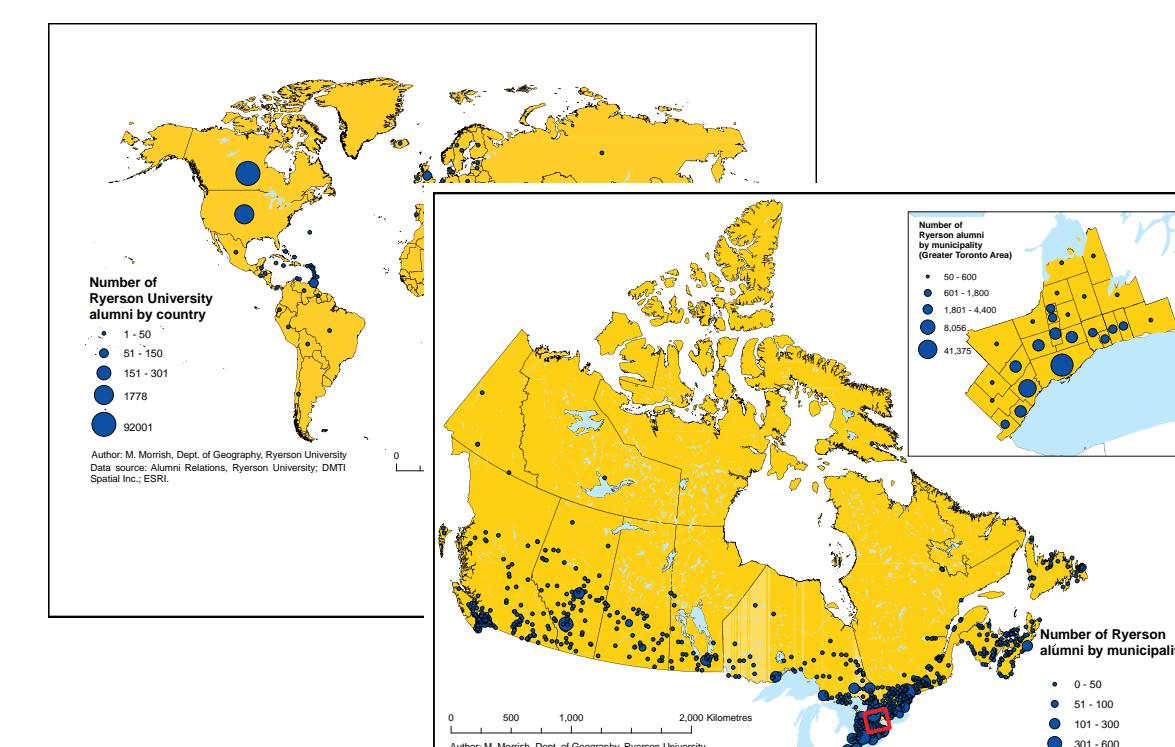
Postal code data provided for this project included many duplicates. This can be observed in the sorted ArcMap Attribute Table above. A postal code is required to be unique to perform an accurate join to the alumni postal code data. To correct for this issue, records that have a total points of call (TOTAL\_POC) greater than zero were selected and exported as a new shapefile.



To present the alumni within Canada by municipal region, a spatial join was completed in ArcMap. Alumni grouped by postal code were now consolidated into municipal regions. The demands on time and computing resources of this step forced the move to a provincial strategy. Once completed the provincial data were combined back into a national data set.



Data for Canada's municipal regions, as provided, presents boundaries that extend beyond the limits of land. Canada's east coast is illustrated here. Symbols placed on the map within these regions could very well, and did, end up in unexpected places such as the Atlantic Ocean. Symbols that had this issue were manually repositioned to their correct location. This was achieved by converting the layer with the symbols to graphics and then moving each individually.



To complete the project, the maps and symbols have been coloured with Ryerson University's blue and gold. Scales and legends have been added. Titles have been omitted by request and will be accommodated when the maps are included in a future publication.

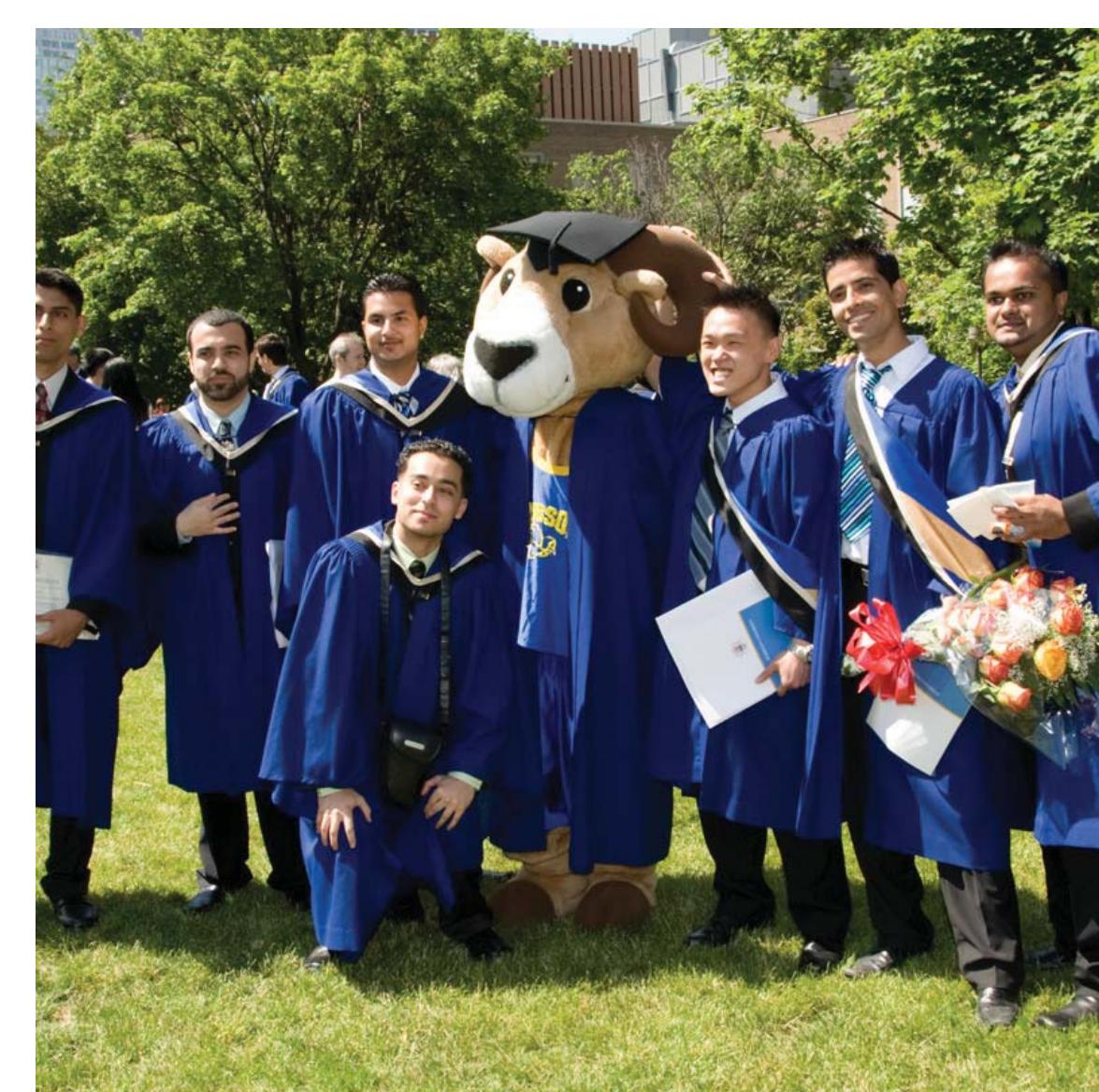


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