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Potential of Geographic Information Systems for Refugee Crisis: Syrian Refugee Relocation in Urban Habitats

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ABSTRACT

Spatial decision support systems have become ubiquitous tools in planning and understanding regional dynamics. With the present challenges faced throughout the world, Canada is becoming an increasingly important benchmark for migrants of different nations to start safe and productive lives. With the latest group currently entering the country are refugees being brought in primarily from Syria, in larger numbers than Canada has seen in decades. Because of this, the government has had to rapidly implement plans to allocate this influx to available places around the country. Because of the particular status of these immigrant's particular attention must be given to address complex social and economic interactions that guarantee opportunity and growth for refugees as well as functional socio-economic habitats within metropolitan regions. This paper adopts a spatially-explicit approach using a key set of socio-economic variables to understand micro-spatial location optima for refugees to begin their lives in Toronto. By intertwining key variables such as accessibility to employment, English language classes, people of similar cultures or situations, proximity to food/clothing/healthcare, a combinatory metric is designed to assess the most adequate liveability within the Toronto Census Metropolitan Area. The micro-spatial models propose an integrative vision of weighted measures to assess the spatial perspective brought by Geographic Information Systems. It is concluded that suburban regions around major cities hold a significant potential for refugee habitats, suggesting the integration of regional intelligence paradigms in the spatial planning and regional decision support systems of governmental and policy interaction.

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1. Introduction

Throughout the last decades, many refugees have been arriving to North America legally and illegally in order to escape different crises occurring around the world, including war-torn countries and economic hardships (Ethier, 1986). While some are sponsored through the government, some enter the country directly without sponsorship and therefore have a more difficult path to settlement in a new and strange environment (Murdie, 2008). The recent civil war in Syria has encouraged increased action from several countries around the globe (#WelcomeRefugees: Phase 5, 2016). Canada has welcomed and processed over 25,481 Syrian refugees from November 9, 2015 to February 29, 2016 (with the volume continuing to increase), making 82 flights from Syria to Canada (#WelcomeRefugees, 2016). These immigrants are considered

resettled refugees. Many of them reside in temporary housing, including hotels and shelters (Fig. 1).

Presently, most of these are Government-Assisted Refugees (GARs) residing in temporary housing in 36 communities within the 10 provinces and 1 territory (Yukon). GAR is government-owned and helps out with the “settlement for the refugees up to one year” (Map of Destination Communities and Service Provider Organizations, 2016). Some of these people are also Privately Sponsored Refugees (PSRs), who are, as the name suggests, privately sponsored by other families in Canada, who agree to provide support and financial assistance to the refugee for one year (Resettlement from Outside Canada, 2015). Within the current advances in data science and computational methods (Hattle, Yang, & Zeng, 2016), geocomputation (Vaz & Nijkamp, 2015) and spatial analysis can be important methods to understand and optimize this relocation (Çetinkaya, Özceylan, Erbaş, & Kabak, 2016). Spatially-enabled models may have a profound impact in shaping the future sustainability and adaptability of refugee immigrants in

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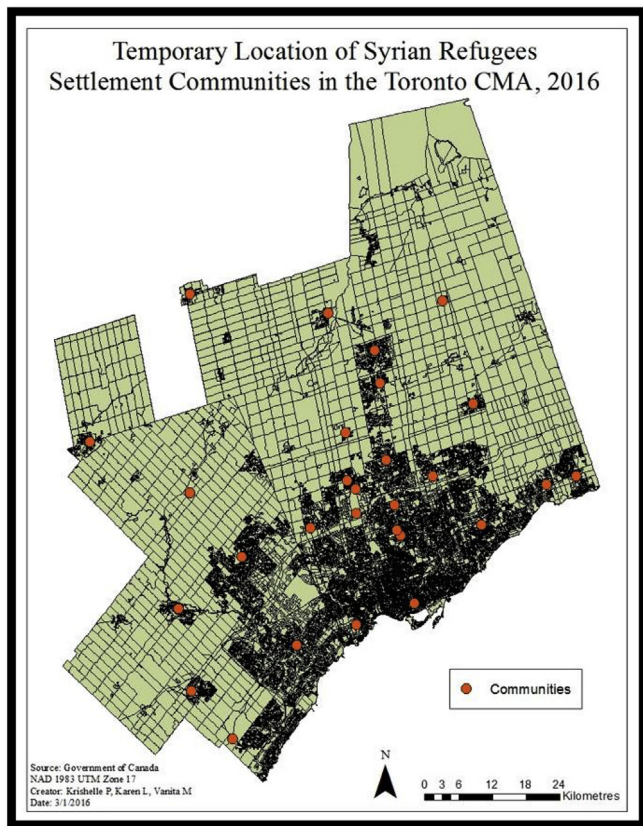


Fig. 1. Settlement communities in the Toronto CMA.
Source: Government of Canada.

major urban habitats and for migration patterns in general (Pellegrini & Fotheringham, 2002). Furthermore, regions where diversity is present and where local amenities exist within urban cores, may become functional and efficient hubs for immigrant integration and accommodation of a nurturing environment by means of developing regional intelligence applications as decision support tools (Vaz, 2016).

Toronto, with its particular geographical and urban characteristics (Vaz & Arsanjani, 2015), presents an interesting functional refugee habitat in its peripheral regions, taking benefit of the integration of GAR and the ongoing demand for nurturing environments, offering necessities such as clothing, food, shelter, basic household needs, including household goods, linen and furniture (#WelcomeRefugees: Phase 5, 2016). While this support will be decreased over time, consolidated socio-economic structures must be created to (i) support the refugees with permanent housing (Kleit & Manzo, 2016; Phillips, 2006), (ii) allow refugees to become well integrated members in society (Hall, 2016; Miles & Thränhardt, 1995), (iii) foster the educational and social development of new communities holding diversity, tolerance and social equity (Rutter & Jones, 1998; Nash, Wong, & Trlin, 2006; Schick et al., 2016).

Within the Greater Toronto Area, this presents a series of challenges intrinsically linked with the availability of financial resources, where within the city core, private rentals and purchasing is particularly high (Murdie, 2003). With the ongoing economic growth, this pattern is expected to continue in major urban hubs in Canada, however, it is exactly in these locations where opportunities might arise in the initial stages, allowing refugees to promptly integrate within the system. It is hypothesized for this

study that “majority of the refugees [are going to] live in the older inner suburbs [areas], primarily Scarborough and North York, where rents are relatively inexpensive. Others [are going to] live in Mississauga, in less expensive parts of the central city” (Murdie, 2008). While many immigrants have naturalized their preferences in accordance with their personal characteristics (education, language ability, income, social and political), they would likely prefer to settle in an area in which they are able to afford adequate living conditions.

There are several factors that need to be taken into consideration when trying to achieve this goal, as well as considering longer-term living in Canada. This includes easily accessible transportation in order to access the necessary amenities, while at the offset owning a car is unlikely. Proximity to these amenities, including schools for children, education centres for adults (including English language classes to aid in securing employment), employment, health care and other aid services and basic necessities such as food and clothing.

Although the experiences of the large variety of immigrants in Toronto's CMA have been documented, less is known about the challenges while trying to assimilate into a new community. Both groups face similar hardships to those of low income, but also face the unique barriers because of their backgrounds, experiences and differences. These include limited or no English-language skills, unfamiliarity with the customs, usually limited finances and few local friends and family. An important aspect of this is the stigma that comes with this specific group of refugees; xenophobia and Islamophobia have been present in the receiving countries (Achiume, 2013; Nagel, 2016). Discrimination must be avoided thoroughly to allow adequacy of integration, where similar ethnic and cultural contexts could mitigate such concerns (Culik, 2015).

Furthermore, numerous refugees are not coming to Canada individually; many are arriving as a family with a capita per household of 6.8 people (Hainoun, Seif-Eldin, & Almoustafa, 2006). This may also be a concern as number of family members will affect the decision on what type of household these families will need.

As English and French are Canada's official languages, it would be beneficial and quite necessary in order for refugees to live, communicate and potentially prosper in the country. Since having linguistic knowledge is not required in refugee's selection, there are a majority of refugees that were admitted to Canada who do not speak either English or French (Beiser & Hou, 2000). A study conducted in 2000 stated that Ontario spent over \$390 million per year on language training for adult newcomers.

It has been shown that 54% of all refugees in Canada report income from social assistance. When comparing this to other immigrants, it is significantly higher - other immigrants' average usage for social assistance are 10% or less (Yu & Dempsey, 2004, pp. 5–9). Since refugees will likely have difficulty finding employment opportunities, they would require financial assistance (e.g. employment insurance) to enter the labour market force initially. Furthermore, they would need to be in a proximate location to be able to access places of employment, which would increase their chances of securing employment as well. Accessibility is only one of the barriers; others include language spoken and experience that is considered valid in the country (Bevelander & Lundh, 2007). Historically in Canada, from the Immigration Database, it can be seen that an average of 43% of female refugees have secured employment within 5 years, and 72% of males (Bevelander & Pendakur, 2014). These rates are affected by employment opportunities and economic climate, but can be improved in part by finding an optimal location to settle and from which to seek employment. Some refugees have previously started their own ethnic businesses so it would be beneficial if they were located in proximity with the other same ethnic communities and easy access to consumers and

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