

Vulnerable Census Tracts and Poor Air Quality: An Investigation in Montreal, Toronto, and Vancouver (2001, 2006, 2011, and 2016)

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Exposure to fine particulate matter (PM_{2.5}) has deadly health outcomes. Canada's disparities in air pollution exposure have been investigated along different vulnerability categories. Renter status, low-income status, and dwelling value, the vulnerability variables in this study, have been linked to other social and environmental disparities in Canada. This thesis explores PM_{2.5} exposure at the census tract level in the Montreal, Toronto, and Vancouver metropolitan areas for 2001, 2006, 2011, and 2016 using these vulnerability variables. I investigated these relationships between the vulnerability variables and PM_{2.5} levels using correlations and the bivariate local Moran's I. I found consistent correlations over time between these vulnerability variables and PM_{2.5} exposure. The spatial clustering was linked more to city center location than vulnerability metrics. The results in Montreal were unique, so I studied the island of Montreal further in a regression analysis. Overall, this longitudinal cross-city study bettered understanding of the relationships between social vulnerabilities and air pollution in Canada.

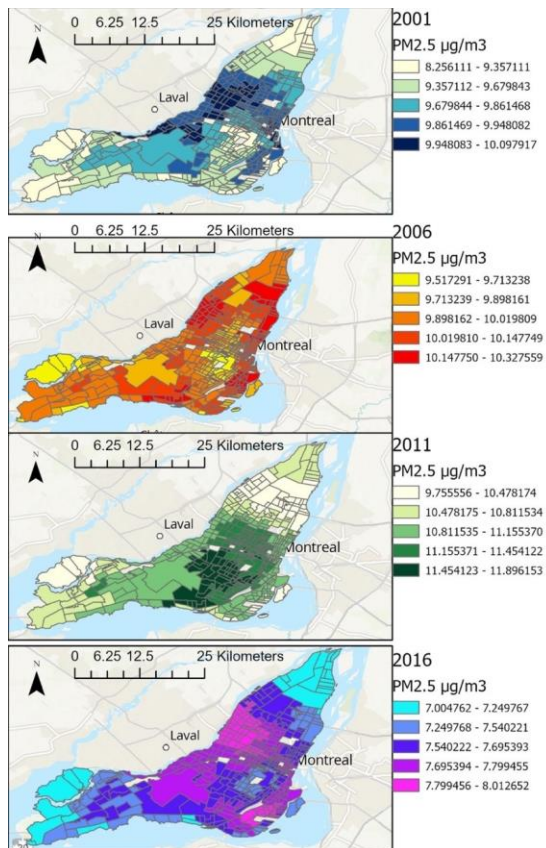


Figure 1. PM_{2.5} Levels in the Island of Montreal for 2001, 2006, 2011, 2016