

ESRI App Challenge 2024: Sprawl Stoppers

Our Mission

As students in McMaster University's School of Earth, Environment, and Society, we have all taken courses in the realms of urban planning and sustainability. Our knowledge of the area allowed us to immediately recognize the topic of urban sprawl as one of the greatest issues plaguing North American cities in the 21st century. We aim to educate a broader population about this issue, since it impacts all residents of Western societies.

With the mass adoption of the automobile among North American households in the 20th century, individuals were granted a new liberty to travel outside of their cities. Alongside these new freedoms came a change to the urban form of our communities. Cities began expanding well beyond their limits, as families sought more space, cheaper land, and to flee the industrialized inner cities. With this, the suburbs were founded.

After a century of expansion, we are now grappling with the issues brought on by urban sprawl, particularly due to the reliance of suburban communities on personal automobiles. The *system of automobility* has led to mass decaying infrastructure, lack of access to job opportunities, and especially disastrous environmental consequences. In our current era, we are now shifting our focus to making less automobile-dependent communities, with the outside environmental impacts of personal car use in mind.

Our team seeks to examine how urban sprawl relates to automobile usage and air pollution in the Greater Toronto Area. While the GTA is centered on the dense urban core of Toronto, the peripheral zones are overwhelmingly composed of low-density, suburban, single-family homes which are largely automobile-dependent. Densifying these communities will be an uphill battle, however their automobile dependence can be supplemented by transit systems which connect them to major destinations, such as southern Ontario's GO Train system.

About the App

The application we have developed examines how automobile use increases with distance from the city centre, as a proxy variable for air pollution. We also use municipal and regional transit systems to examine the impacts of these networks on automobile use. While our application does not directly measure air pollution, we maintain a focus on this aspect of automobile use through an education section.

We hope that demonstrating the positive impacts of densification and provision of transit on air pollution will inspire more municipalities to initiate responses in the form of urban planning initiatives in this area. It is the responsibility of all to make our communities more environmentally-friendly, and that begins at the planning level.