Capstone Project - GHGs emission hotspots in Edmonton

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Introduction

- Emission of greenhouse gases (GHGs) is increasingly becoming a major concern for large cities around the world, and the city of Edmonton is of no exception.
- As the Economist for the Ministry of Environment and Parks (Government of Alberta), I would like to identify areas in the city of Edmonton where emission of carbon dioxide (CO_2) is likely to be more concentrated. This will ensure that appropriate measures are taken to reduce emissions in these areas.

Introduction

- GHGs results in warm temperatures by trapping heat in the atmosphere. Studies show that human activities are the main cause of increase in these GHGs in the atmosphere.

Introduction

- For the purposes of this study, I will concentrate on CO_2 emissions. This is because it is the most common GHG emitted in Canada and also the most difficult to deal with since it stays in the atmosphere for relatively longer periods.

Introduction

- The primary sources of CO_2 emissions in Canada are: transportation, electricity production, industry, commercial and residential, agricultural, land use and forestry.

Business Problem

- The increase in temperatures due to CO_2 emissions has several impacts. Chief among them is the human health impacts, not to mention the environmental and economic impacts.
- Higher temperatures and extreme weather events may increase the risk of deaths, and of injuries from intense local weather changes. There may also be greater risk of respiratory problems.

Business Problem

- Activities that results in an increase in CO_2 emissions may be concentrated in certain neighborhoods. These may include locations where industries such as oil fields, restaurants, and farmlands are located.
- The main objective is to find areas in the city where restaurants and other activities that result in CO_2 emissions are concentrated the most.

Data

Neighborhood Data

In my analysis, I will be leveraging data on the neighborhoods in Edmonton, Alberta. This data would be extracted by web scrapping using `BeautifulSoup` library in Python.

Data

Neighborhood Data

The data will be obtained from: `https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_T` which contains a table with all the neighborhoods in the cities of Alberta. The table provides information on Postal code, Borough, Neighborhood, as well as latitude and longitude cordinates of all the neighborhoods.

Data

Venues Data

Next, the location data will be used to pass the required parameters to the `FourSquare API` in order to retrieve details on the different venues in each neighborhood.

Data

Data Use

Having obtained data on the venues in each neighborhood in Edmonton, I will cluster neighborhoods based on their similarity in terms of venues such as restaurants, oil fields, industries, office buildings etc. This will allow for determining hotspots for CO_2 emissions.