### **Write-up (30 points)**

* Introduction: The introduction provides a clear explanation of the question and the dataset used to answer the question, including a description of all relevant variables in the dataset. (3 points)
* Justification of approach: The chosen approach and visualizations are clearly explained and justified. (3 points)
* Code: Code is correct, easy to read, properly formatted, and properly documented. (10 points)
* Visualization: The visualizations are appropriate, easy to read, and properly labeled. (10 points)
* Discussion: Discussion of results is clear and correct, and it has some depth without begin excessively long. (4 points)

Introduction

In this project, we utilize interactive and animated spatio-temporal visualization to illustrate how the composition of non-emergency requests differ across communities with varying sociodemographic characteristics in the Chicago 311 Service Requests data.

The 311 system is a non-emergency response system where people can make a request to find information about services, make complaints, or report non-emergency problems, such as potholes and trash collection. While the system was initially designed to reduce call volume on the overloaded 911 system, 311 request systems have become an integral part of the e-government movement in which technological innovations are deployed to help local governments deliver more efficient and effective services to residents. Thus, we employ the 311 data in Chicago to provide insights on the variation of communities’ needs and assist the city to better allocate resources accordingly. We incorporate the demographic distribution or socioeconomic measures in order to determine if areas with unusually high or low requests for different services may correlate to a certain distribution of the area.

We focus on two measures of interest regarding the 311 data: number of requests and the amount of time it takes to complete a request. While the first measure informs the demand of non-emergency services, the second measures reflects on the quality of responses from the city to its residents. We use zip codes to identify our geographical areas and merge in socio-demographic information from the American Community Survey (ACS) 2019.

Data