Emergency facility location planning

1. Problem description

The following data set summarizes emergency calls from Montgomery County in Pennsylvania (US) from December 2015 until April 2017. The data set contains geographical coordinates, ZIP code, township, address as well as time stamp of the record. Additionally, a description (desc) and classification (title) for each event is given. The events are categorized in traffic-related, fire-related, and medical-related events. In each category (title), sub-categories are given (like diabetic emergency in case of emergency medical service [EMS]). In total the data set contains more than 660k events. A more detailed description can be found here https://www.kaggle.com/datasets/mchirico/montcoalert/data.

2. Task

Help the county and propose potential locations for emergency stations. To do so, choose an appropriate location planning problem and solve it (if necessary draw a random sample from the set of events). Calculate distances between locations based on simple geographical measures (like Euclidean or Manhattan distance). Provide an overview on the data by analyzing the temporal and spatial distribution of emergency calls as well as their categorization. For facility location planning, restrict your analysis to medical emergencies (EMS).