# Question 4.1

Describe a situation or problem from your job, everyday life, current events, etc., for which a clustering model would be appropriate. List some (up to 5) predictors that you might use.

One real-life situation for which a clustering model would be appropriate would be a retail business using k-means clustering to determine the optimal number of delivery routes/launch locations. Ventures such as Amazon with large numbers of warehouses often attempt to maximize their efficiency and profits by optimizing the locations of their distribution centers, making such a use of k-means clustering vital to the growth of their operations. Five predictors that could be used to create such an optimization via clustering include:

# Population density (e.g. by district/metropolitan area)

1. Amount of businesses in the defined area (tied with economic status of average resident in area)
2. Most frequently ordered product categories in area
3. Distance from nearest existing distribution center(s)
4. Demographics of surrounding population

# Using such predictors, among other fluctuating variables (e.g. weather in the area, etc.), Amazon is able to determine efficient routes that will minimize the amount of expenses/time spent in making frequent deliveries and thereby maximize their profits. As a result, we can see that k-means clustering has real-life applications with tangible impacts upon even entrepreneurial behemoths like Amazon.com.