Project Overview

Team 6

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1. Title

Analyzing the number of subway users before & after social distancing

2. Overview

Since January 2020, the South Korean government has implemented social distancing to respond to COVID-19. When social distancing phase 2 is implemented, facilities such as restaurants and academies are closed from 9 p.m. So, the number of people using the subway would also have decreased. We will use R to analyze how the number of people using the subway has changed. We will see whether social distancing has helped respond to COVID-19 and look for ways to improve social distancing in the future.

3. Dataset

We will use public subway data managed by the Seoul Metropolitan Government. In this data, we can see the number of people getting on and off by station, day, and time zone. We are planning to analyze data from June 2016 to April 2021.

http://data.seoul.go.kr/dataList/OA-12914/S/1/datasetView.do

4. Tools & Packages

We will analyze the data using the R. readxl package which will be used to read excel files. dplyr, stats package will be used for data analysis.

5. Project Objective

(1) Number of subway users by time before/after social distancing

With the outbreak of COVID19, the government implemented 'social distancing'. For this reason, restaurants, cafes, pubs, and entertainment facilities are no longer available after 9 o'clock. We can see if these measures have effectively reduced the floating population after 9 o'clock. To confirm this, we will divide the material into three parts.

- The period when the ban on gatherings after 9 o'clock is not enforced.
- The period when the ban on gatherings after 9 o'clock is enforced.
- The period when the ban on gatherings after 9 o'clock was relaxed.

During these three periods, we will examine the floating population after 9 o'clock to see if social distancing is effective.

(2) Overall difference in number of subway users
As a result of objective 1, we can see if the floating population after 9 o'clock has decreased or not. If the floating population has decreased after 9 o'clock, we will check how the daily floating population has changed. If there is no change in the daily floating population, it is necessary to find the period of increase in the floating population. Therefore, these results mean that the floating population after 9 o'clock moves before 9 o'clock, and it means that social distancing doesn't work.

(3) Subway users in the main streets (번화가)
We will also observe the subway users in the main streets of Seoul, and investigate whether social distancing had an impact on decreasing the floating population around those crowded places. First we will extract the main streets (e.g., Sinchon, Jongno, Gangnam) from the subway dataset and compare the number of users before & after social distancing. We expect the number to decrease in most cases, but for the places that show an increase in number, we will search for possible reasons and explain how it has led to an increase in subway users.

서울 여의도 '더현대 서울' "주말에는 지하철 이용하세요"

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현대백화점이 최근 서울 여의도에 개점한 '더현대 서울'에 대한 자율 방역 조치를 강화하기로 했다.

5일 현대백화점에 따르면 더현대 서울은 정부의 사회적 거리두기에 동참하고자 3월 한 달간 한시적으로 주말 차량을 이용해 방문하는 고객을 대상으로 차량 2부제의 자발적 동참을 유도할 방침이다.

지난달 26일 공식 개장한 더현대 서울은 신규 점포에 대한 호기심, 독특한 콘셉트 등으로 소셜네트워크서비스(SNS)에서 화제가 되며 지난 주말 인산인해를 이뤘다.

For example, in the above article we can predict that when a new shopping mall opens then the subway users could increase in nearby stations. We plan to find such exceptional cases by examining the subway traffic.

6. Additional variables

- The time intervals between the trains are longer than before and the time of the last train has been advanced due to the social distancing policies.
- The number of users of buses and cars can influence the subway users. Due to COVID19 people may prefer individual transportation over subway and bus.
- The government has set different stages of social distancing therefore we may have to divide the period of the dataset based on the social distancing stage.