Data Analysis about Seoul Bike

CONTENTS

- **Seoul Bike Program?**

- **Data Analysis about Seoul Bike System**

What is Seoul Bike Program?
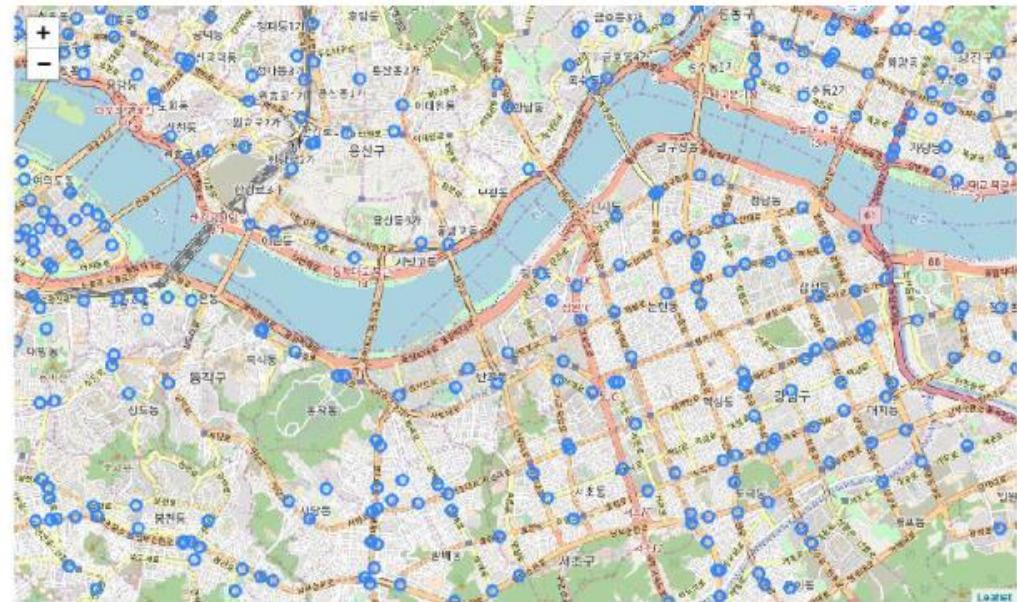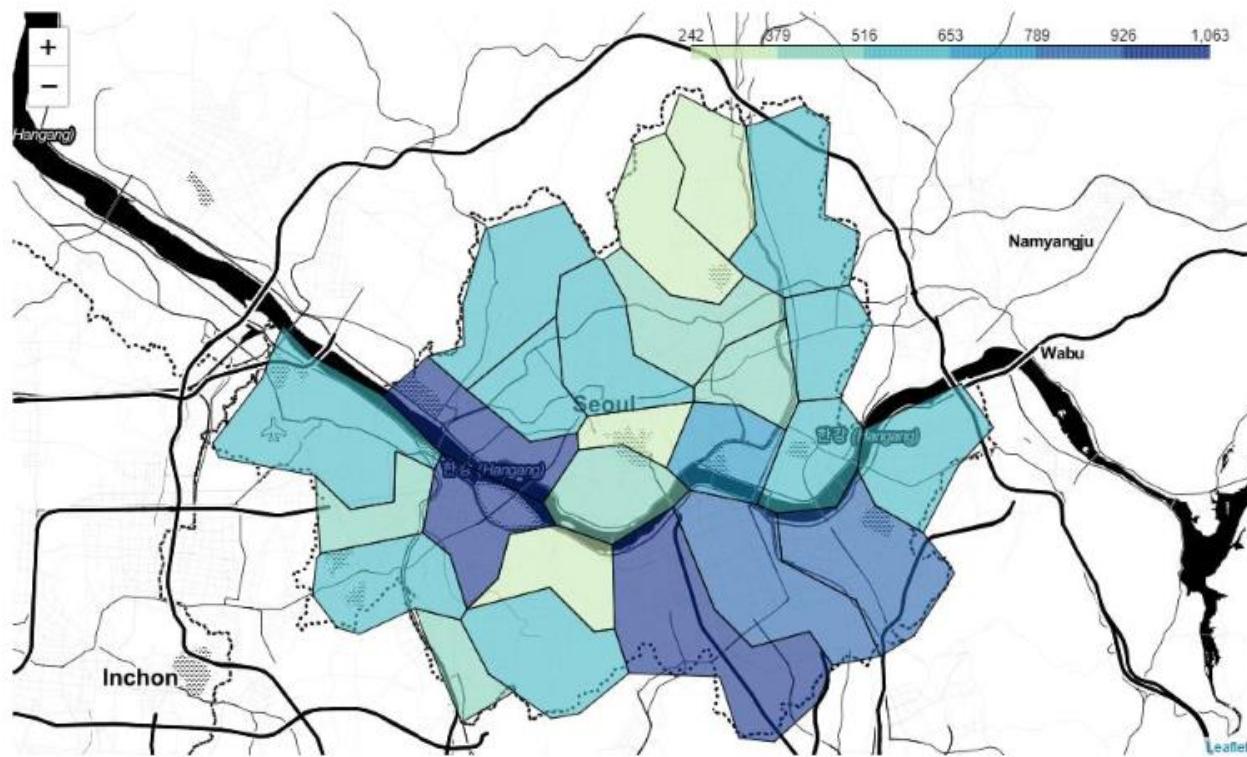
The fully unmanned public bike rental service, which started trial operation in 2014 and started full-scale operation in October 2015.

- As the use of the bike is activated, demands for the installation of Seoul Bike stand are increasing, and complaints are continuously posted about the installation of the rental shop in Seoul Bike.
- As the word 'Bike Influence Area(like Station Influence Area, a.k.a. SIA) media reports say that non-close users are feared to be alienated.

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1. Status of the Seoul Bike Holder Distribution and Location

|	구	대여소번호	대여소명	주소	거치대	위도	경도
0	마포구	101	(구)합정동 주민센터	서울특별시 마포구 동교로8길 58	5	37.549561	126.905754
1	마포구	102	망원역 1번출구 앞	서울특별시 마포구 월드컵로 72	20	37.556000	126.910454
2	마포구	103	망원역 2번출구 앞	서울특별시 마포구 월드컵로 79	14	37.554951	126.910835
3	마포구	104	합정역 1번출구 앞	서울특별시 마포구 양화로 59	13	37.550629	126.914986
4	마포구	105	합정역 5번출구 앞	서울특별시 마포구 양화로 48	5	37.550007	126.914825
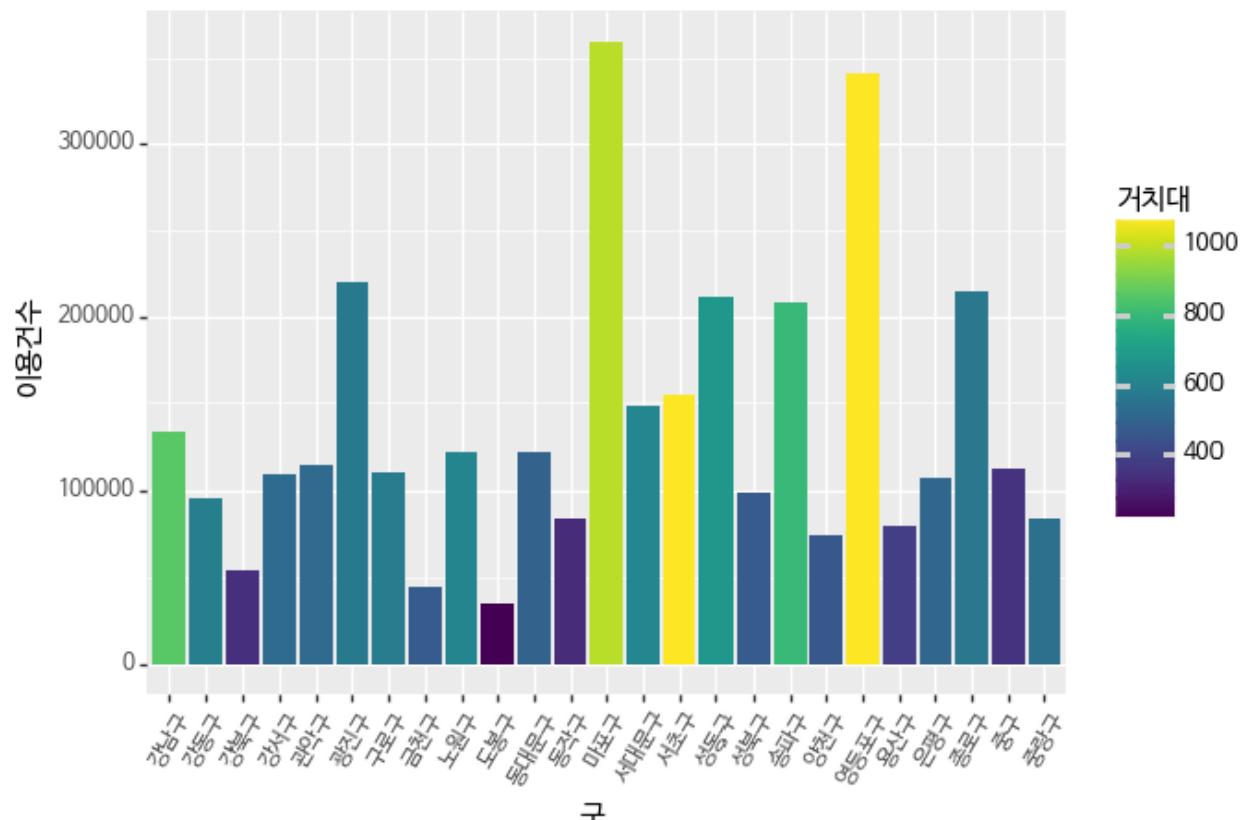
- When the map shows the location data of Seoul Bikes in Seoul, most of them were installed along roads and in areas adjacent to public transportation such as buses and subways. **This seems to reflect the 'linkage to heavy traffic' among the location requirements for Seoul bike rental stations.**
- When **visualized with the addition of the number of stacks per district**, the number of stacks installed in Yeongdeungpo-gu and Gangnam-gu-Seocho-gu is concentrated, while the number of stacks installed in Dongjak-gu, Yongsan-gu, and Dobong-gu is relatively small, i.e. there is a regional bias.

Data Analysis about Seoul Bike

2. Analysis of The Number and Type of Seoul Bike Holder Using Behavior
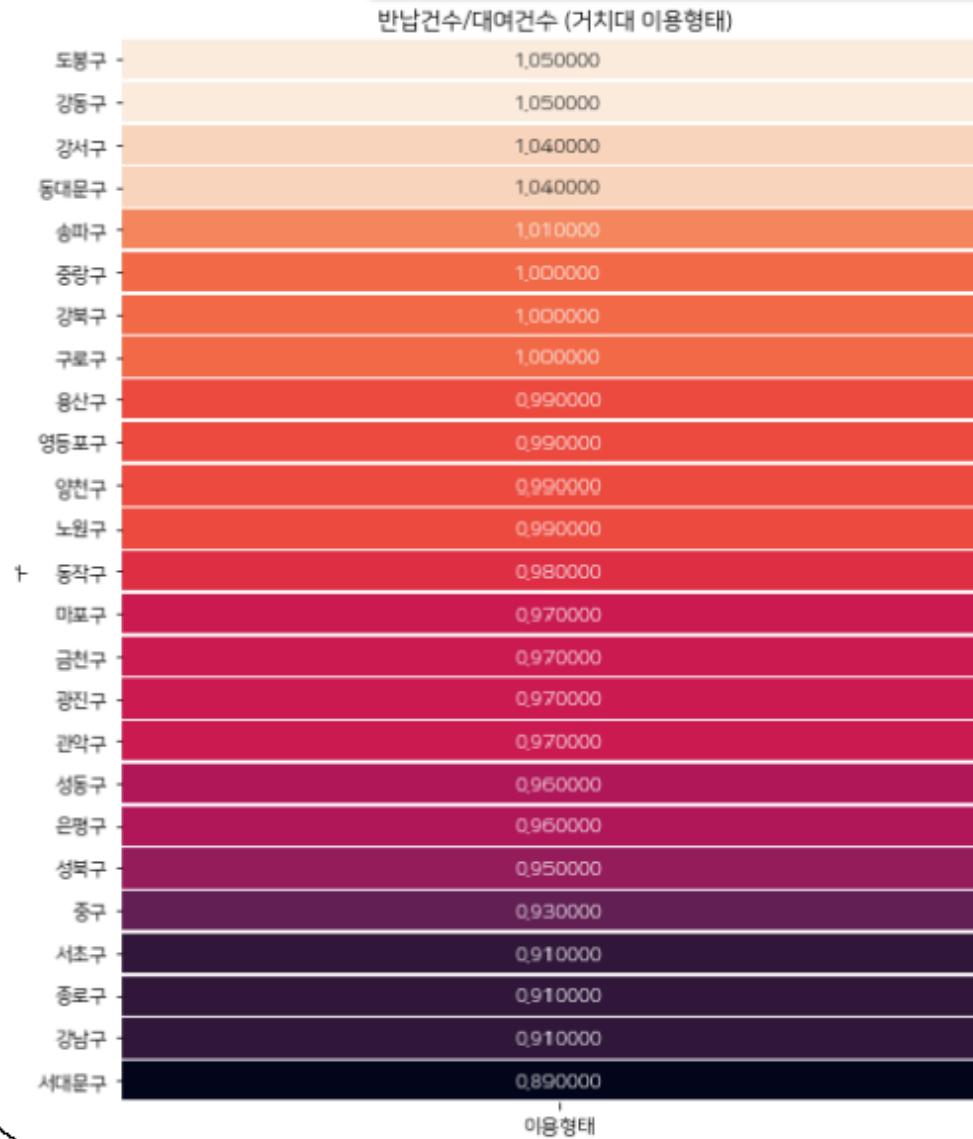
- When analyzing the number of units to be installed and the number of uses to be used by each rental office, four types stand out.

(1) Areas with a large number of hangers and lots of use: Mapo-gu, Yeongdeungpo-gu
(2) Areas with many hangers and fewer use: Seocho-gu, Gangnam-gu
(3) Areas with less stand and more use: Gwangjin-gu, Jongno-gu, Seodaemun-gu
(4) Areas with fewer hangers and fewer use: Gangbuk-gu, Dobong-gu, Geumcheon-gu

- According to the plan to promote the distribution of Dareung in 2017 with the four major locations of Yeouido, Sangam, Sinchon, and Seongsu, you can see that Dareung is active among Mapo-gu and Yeongdeungpo.

- You can see that Gangnam district and Seocho district have relatively large number of hangers, which are not the four major strongholds and are not widely used.

Data Analysis about Seoul Bike

2. Analysis of The Number and Type of Seoul Bike Holder Using Behavior

반납건수/대여건수 (거치대 이용형태)

| 도봉구 | 1,050000 |
강동구	1,050000
강서구	1,040000
동대문구	1,040000
송파구	1,010000
중랑구	1,000000
강북구	1,000000
구로구	1,000000
용산구	0,990000
영등포구	0,990000
양천구	0,990000
노원구	0,990000
동작구	0,980000
마포구	0,970000
금천구	0,970000
광진구	0,970000
관악구	0,970000
성동구	0,960000
은평구	0,960000
성북구	0,950000
중구	0,930000
서초구	0,910000
종로구	0,910000
강남구	0,910000
서대문구	0,890000
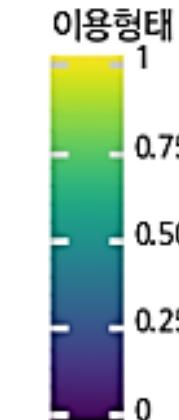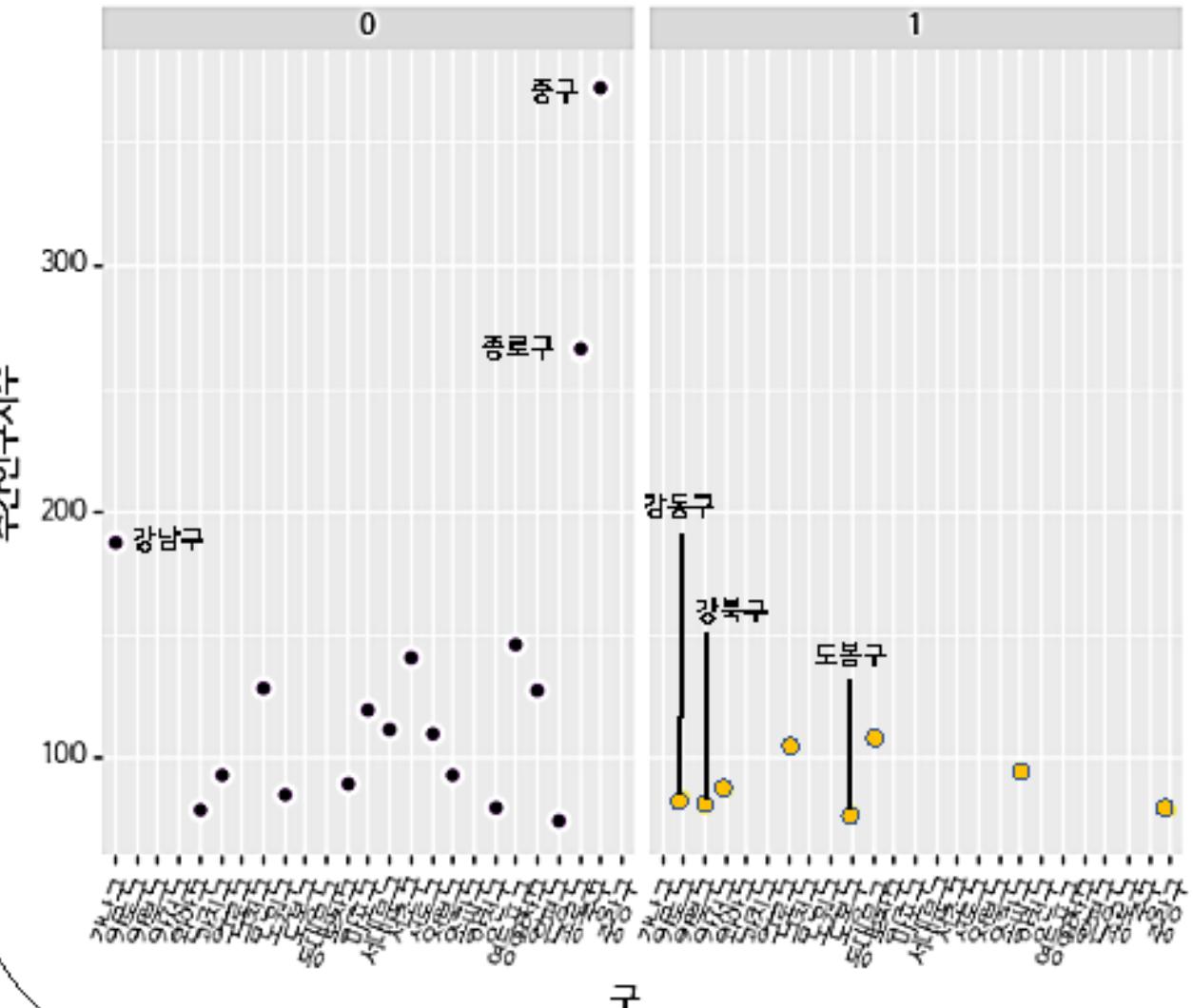
이용형태

구	대여건수	반납건수	거치대	위도	경도	이용형태
강남구	1841.183099	1732.690141	11.901408	37.502794	127.053124	0.907324
강동구	2231.785714	2317.547619	14.166667	37.546995	127.143523	1.049643

- Based on the number of rental information data and the number of return cases, an analysis is made on whether the rental office is used for **return purposes or for rental purposes.**
  (Use type is derived by return / payment on a scale of 1.)
- Analysis shows that Dobong-gu, which used to be low in both number of stands, often returns the type of holder used.
- On the other hand, Yeongdeungpo-gu and Mapo-gu, which both had high number of hangers and use cases, have similar levels of return and rent, and Gangnam-gu and Seocho-gu, which had a large number of dues compared to the number of use cases, are often rented.
- Gwangjin-gu, Seodaemun-gu, and Jongno-gu, which used to be more frequently compared to the number of hangers, also had a large number of rents.
- From the results and the fact that the city has many employees, it is possible to hypothesize that the area of this large residential area will have a large number of residents.

Data Analysis about Seoul Bike

3. A Study on the Relationship between Daytime Population and Attachment Behavior of Seoul Bike Holders

주간인구지수와 이용형태 관계

	구	상주인구	주간인구	주간인구지수	동구유입	동구유출	동구인구	이용현태
0	송파一	117507	382128	265.7	254024	34118	289043	0.91
1	을一	118532	142225	372.3	330898	25872	356770	0.93
2	상신一	211973	270006	127.4	111234	50184	171418	0.99
3	성능一	283896	311253	108.6	103131	86960	190081	0.96
4	강신一	349775	323842	92.6	73000	112572	189672	0.97
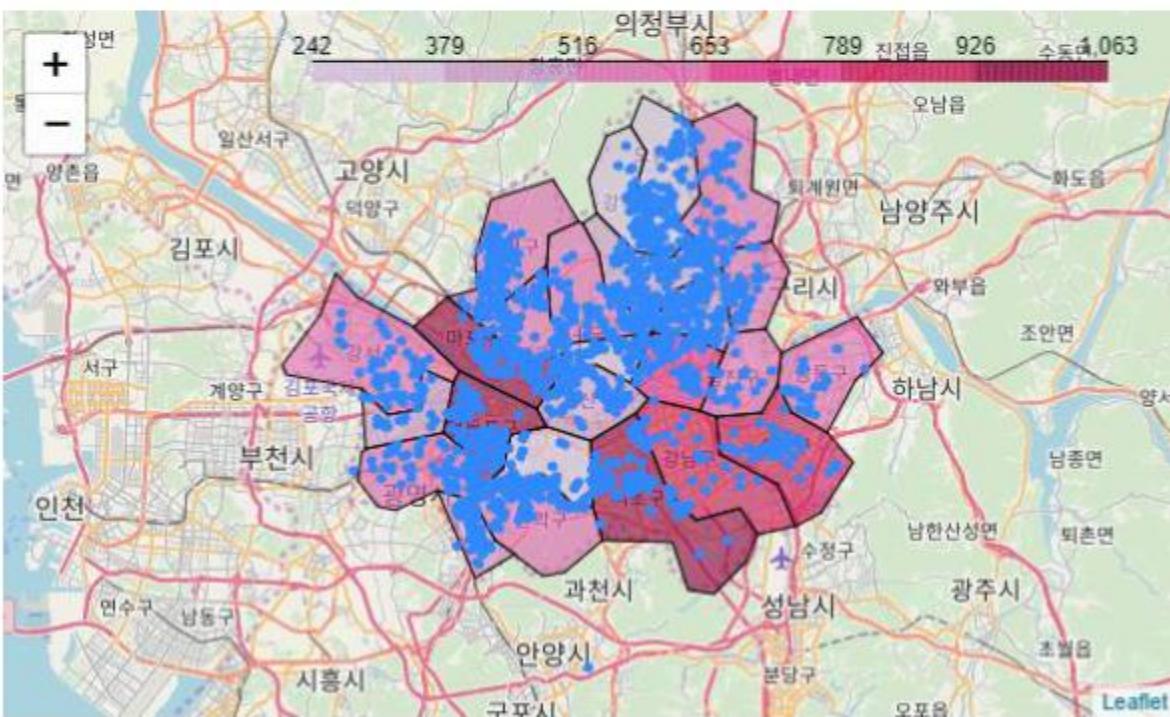
- The weekly population index calculated based on the residential population (residential population) and daytime population (college population) by each district and the number of daytime population (tongue, commuting population) and the total number of residential areas where **the daytime population type is 'returned' is 1 and the number of areas where the weekly rental index for areas 'use type >1' is less than that of other areas is 0.**
- In particular, the weekly population index for Dobong-gu was the lowest, with both the number of hangers and the number of use cases, and the highest return-on-aid. **Users of Dobong-gu can infer that the rental of Dobong-gu's Seoul bikes will be in the form of a rental and return them near their residence.**

Data Analysis about Seoul Bike

4. Relationship between Business Area and Seoul Bike & Additional Research Points

- From the fact that the main users are workers and use it a lot when commuting to and from work, **the company hypothesized that its location would be related to commercial rights.**
- As the distribution of commercial districts in Seoul is shown above the scale of the number of rental shops, it shows that the areas where **business districts are concentrated and the areas where rental centers are concentrated do not match much.**
- It can be inferred that there is not much connection with commercial districts because office workers use the bikes during rush hour and night time when business district is active, they will rent the bikes near the workplace and return them at the hangout stand near the residential area.

We can more think about:
- The **Seoul Bike rental center is selected after surveying candidate sites.**
- Analysis of related factors including subway stations, bus stations, apartments, residential stations, shopping malls, government offices, parks, and universities included in the candidate site survey form can be conducted to analyze their connection to the surrounding land use.
- Based on the commercial district income consumption data, you can analyze the characteristics of the commercial districts around the hangar in Seoul.
- We can analyze validity of the connection to public transportation through the introduction of commuting to the area, the population of commuter runoff and the rental and return status of the city walls.

Thank you for Reading This Report.