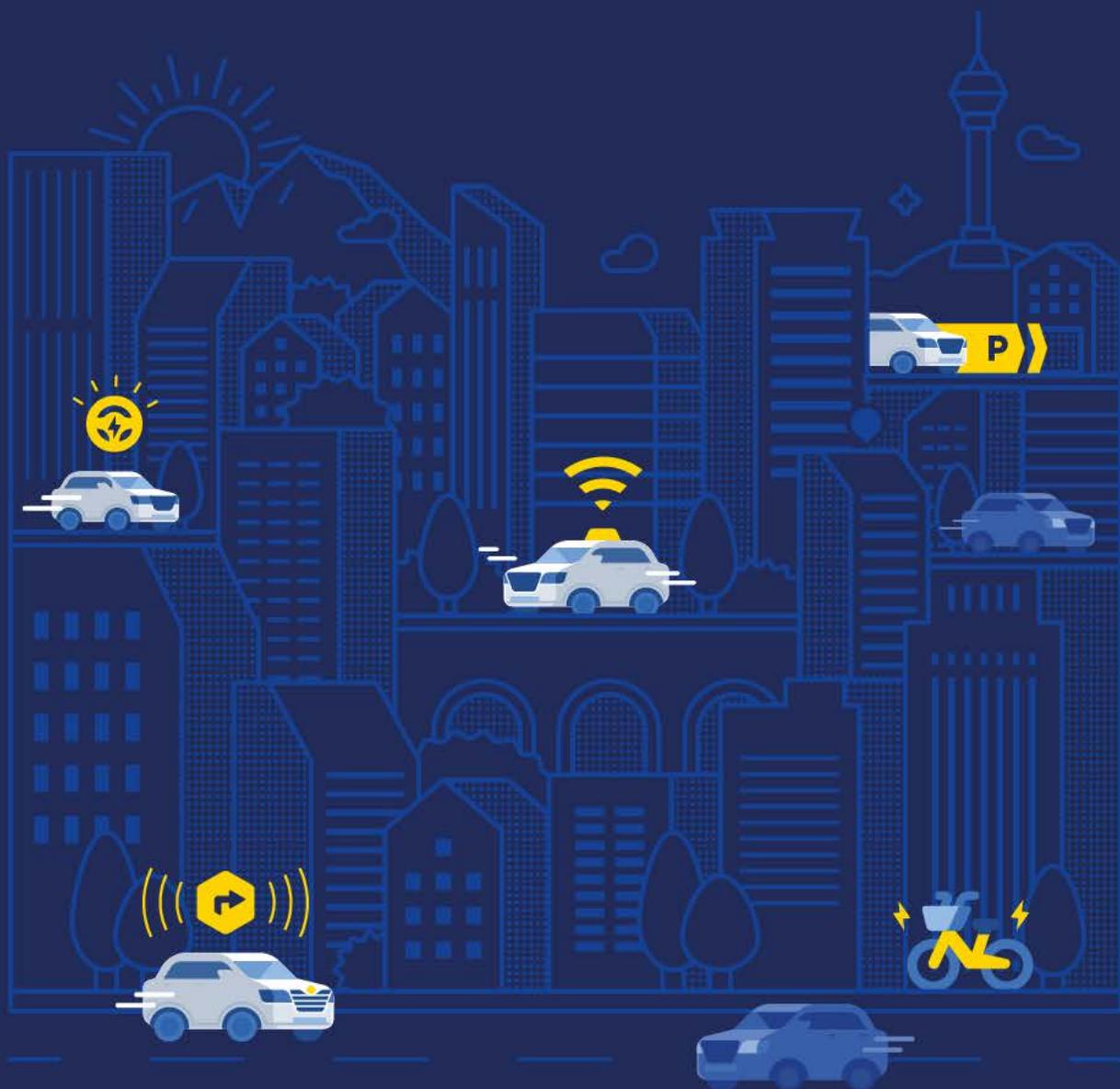


2019 KAKAOMOBIITY REPORT



2019
KAKAOMOBILITY
REPORT

CEO's message

It has been four and a half years since Kakao T Taxi was introduced in March 2015. Since its launch as a consolidated app in October 2017, the Kakao T app has secured 2.3 million subscribers and became an essential service responsible for all Koreans' travelling. From Taxi, Black, Driver, Navi and Parking to a bike sharing service Bike, Kakao T is connecting people's life in a faster and smarter way in a single app that meets different travel demands of customers.

2019 kakaomobility Report looked into diverse travel patterns of people on an analysis of the mobility big data accumulated so far. 'Who prefers which service when' was narrowly observed, and alternative measures for better mobility services were identified. Topics that require our partners and the central and local governments to discuss to help people to travel more conveniently were presented.

Meanwhile, a variety of high technologies that Kakao Mobility is working on to provide innovative services were introduced. We believe that ranging from detecting the exact location of vehicles and users to optimizing matching rates based on machine learning, continuous technology innovation will lay a foundation for keeping the pride of domestic technical companies in an era of global competition.

After the taxi industry and platform service providers reached a compromise after years of hard work, 'Taxi System Reform Measures for Innovative Growth and Collaborative Development' was announced in July. Limited but diverse mobility services that customers want will be available soon. This is the beginning of mobility innovation in Korea. Hopefully, this report will help people to prepare for a new ear.

JooHwan Jung-Gungseon Ryu
CEO of Kakao Mobility Corp.

About 2019 kakaomobility Report

2019 kakaomobility Report covered five services: Kakao T Taxi, Driver, Navi, Parking and Bike. From individual and collective perspectives, how each service meets different travel demands of customers was observed.

First of all, Kakao T Taxi top departure and destination points were included along with detailed explanations. For readers in each region, not only a nationwide list but also a list of a special city and metropolitan cities were provided. In addition, this report covered different behaviors of customers: when and who used special types of services like a deluxe taxi, a large-sized taxi and Kakao T Black, instead of a regular mid-sized taxi. Taxi shortages during nighttime were analyzed based on the demand/supply level and systemic level of business areas, and their solutions were presented.

Meanwhile, as the revised Road Traffic Law with a tougher DUI enforcement was effective last June, a change in call patterns on Kakao T Driver was observed. Proper shelters for designated drivers who have to continuously walk, run and wait outside were also proposed based on data.

Kakao Navi's top destination points were listed by categories like restaurants, tourist sites, cultural spaces, shopping centers, golf clubs and more. On top of such lists, what a place is and what the next destination is were analyzed together. Additionally, technologies that we are working on to provide more rapid and convenient navigation services were introduced. How

the exact location of a user is detected based on the map matching technology, and how the best route and an estimated time are calculated based on artificial intelligence and big data were included.

This report features Jeju Island, a destination that almost every Korean loves. Favorite destinations depending on types of travellers, and restaurants and cafes loved more by local people were analyzed based on data from navigation and taxi.

In the Kakao T Parking section, how Kakao T has dealt with urban parking problems through sharing and connection was covered. A synergy effect between parking that is responsible for the beginning and end of travel and Kakao Navi that connects its beginning and end was introduced. Last but not least, in the section of Kakao T Bike, a new service that was recently introduced, interesting travel patterns of an electric bike sharing service without bike stations were included.

Mobility data shows our daily life and society and what needs innovation from different perspectives. Hopefully, this report will help people prepare for the future mobility changes.

From 2019 kakaomobility Report authors



Introduction to Kakao Mobility's Key Services





Kakao T Taxi

Since its launch in March 2015, Kakao T Taxi marks its 4th anniversary in 2019, travelling 6.5 billion km with 2.3 million customers. This figure amounts 160,000 times bigger than the Earth's circumference and is a distance traveling back and forth between the Earth to the Sun more than 20 times. This is meaningful achievement made along with 230,000 taxi drivers nationwide.

In order to meet different travel demands of users, Kakao T released new services including Kakao T Black in November 2015, Kakao T for Business in February 2018, Smart Call in April 2018 and Waygo Blue in March 2019. In consideration of the announcement made last July by the Ministry of Land, Infrastructure and Transport regarding a platform taxi based on regulatory innovation, Kakao T is working on a new service for both rapid and convenient travel of passengers and improved career values of taxi drivers.

On top of connecting a taxi drivers and a passenger, Kakao T Taxi is developing the entire industry based on high technologies like big data and AI. The latest technologies have been applied to overall services including big data based waiting place suggestion and machine learning based match algorithms. Such technologies are expected to resolve the underlying imbalances in taxi demand and supply and benefit both a passenger and a taxi driver through efficient matching.

Kakao T Taxi began with the question "How can we use a taxi more easily?" and has finally developed into Korea's leading mobility service. Kakao T Taxi will also make preparations to provide more innovative and different services with a vision of "We provide more convenient mobility services available for all anytime and anywhere."



Kakao T Driver

Kakao T Driver is an app based designated driver service introduced in May 2016.

While existing designated driver services required a user to call an operator to provide detailed info and negotiate fares, Kakao T Driver has made it easier for a passenger to hail a taxi with just a few taps on a smartphone app. Today, Kakao T Driver turned itself into Korea's leading designated driver service with 2.84 million cumulative users and 150,000 authorized drivers.

Kakao T Driver has been growing sharply based on its easy calling, rapid matching and easy payment systems. The current location is automatically shown on a map, frequent destinations are saved and reasonable fares are suggested by AI technologies depending on a route. In addition, with its sufficient pool of drivers, in most cases, a passenger is connected with a driver within 30 seconds after a request is made. Once service is completed, a payment is made automatically with a pre-registered card.

Compared to existing services, Kakao T Driver is noticeably safe. Kakao T Driver was the first in the industry to introduce an insurance system on each ride. In this process, only a driver who passes a particular driving record evaluation is allowed to provide the Kakao T Driver service. When a driver is assigned, his or her face, name and insurance info are provided. A passenger can send an 'on board' message to his/her friend or family while on the move.

The revised Road Traffic Law with a tougher DUI enforcement and higher level of punishment took effect on June 25th, receiving attention from all people in the nation. As public awareness of DUI rises, the number of Kakao T Driver users has increased sharply. Kakao T Driver will stay committed to our mission to get every passenger back home safely.



Kakao Navi

Kakao Navi is a mobile navigation service introduced in February 2016. With its continuous growth, Kakao Navi has grown into Korea's leading navigation service with 160 million navigation guide starts per month.

Traffic data collected from 16 million cumulative users is the core asset of Kakao Navi. Huge amount of traffic data that covers almost all roads in Korea makes it possible to provide fast and precise navigation guides. Another key asset is the traffic data collected from Kakao T Taxi. Information collected from taxis running nationwide provides important data to improve the preciseness of traffic data by region and time.

Various efforts to link mobility services each other are being made. Kakao Navi provides genetic technologies and real time traffic data that are essential for the services pro-

vided by the Kakao Mobility Corp. such as Kakao T Taxi, Kakao T Driver, and Kakao T Parking.

Last but not least, Kakao Navi services are not limited to navigation guides. 'Expressway Emergency Alert Service' which Kakao Navi introduced in early 2018 with the collaboration of NFA (National Fire Agency) showed that navigation technologies could contribute to public interests. Recently, it is also rapidly expanding its platform into a connected car system, such as Android Auto and Apple's Carplay.



Kakao T Parking

Kakao T Parking began its service as a consolidated mobility platform Kakao T was introduced in October 2017. Kakao T Parking is expanding its service in an alliance with owners of over 1,400 private parking lots nationwide and a number of public parking lots in many cities including Seongnam, Bucheon, Jeonju and Hanam.

Kakao T Parking is providing different info and convenient features for users. Kakao T Parking is implementing different features including nearby available parking spots in real time, recent history, selling a parking ticket at a reasonable price, driving directions to a parking lot via Kakao Navi, and automatic payment options on a mobile device instead of cash or a credit card.

A parking lot owner that enters into a contract with Kakao T Parking can also enjoy

different benefits. Kakao T Parking is developing optimized parking products by day of the week or time zone by analyzing parking fees and comparing them with nearby competitors. Besides, it is promoting its service to potential customers in nearby buildings via different tools including Kakao T, Kakao Navi and Kakao Map. Large shopping complexes, airports, local governments and more are among our partners.

Even in the incoming autonomous vehicle era, parking is a beginning and end of travel. Kakao T Parking, which is responsible for a beginning and end of travel, will stay innovative to become a Connected Parking-infrastructure Enabler that connects all parking lots, users and parking lot owners in real time.



Kakao T Bike

Kakao T Bike began its trial service in Seongnam, Gyeonggi and Yeosu, Incheon in March 2019. This is a short and medium distance micro mobility service for those travelling a “too far to walk” distance or with little access to public transportation.

Kakao T Bike is changing a city into a convenient, healthy and pleasant place by providing a technology based bike sharing service. While public bike rental is only available in designated locations, Kakao T Bike can be rented and returned anytime and anywhere. Kakao T Bike uses electric bikes under the Pedal Assist System. For this reason, men and women of all ages can easily bike up a hill with less energy.

Kakao T Bike applied Kakao Friends characters being loved by almost all Koreans to its design: Ryan and Apeach. Kakao T Bike is

creating a new culture that adds fun to travelling by providing pleasant experiences for users in leisure time and commuting time.

Despite its convenient public transportation system, Korea still has traffic congestion problems. Kakao T Bike will make people’s travelling faster and more convenient by resolving the “last mile problem” that existing public transportation has failed to address.



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Kakao T Taxi hot places



Kakao T Taxi travels all over the country

Itaewon Station Line 6 in Yongsan was the most popular departure point nationwide on Kakao T Taxi. There is a reason why the song “Itaewon Freedom” was released. Itaewon deserves to be a hot place for Saturday night fever, a home base for insiders and a hideout for rhythm addicts.

KT&G Sangsangmadang, a landmark in Seoul’s hippest neighborhood Hongdae, took second place. Unfortunately, it yielded the first position to Itaewon this year. Mirae Asset Center 1 BLDG, a big building located between Euljiro and Cheonggyecheon in Seoul, ranked third in the list.

Top ten departure points were landmarks in the busiest districts in Seoul like Itaewon, Hongdae, Euljiro and Gangnam that make people excited only at the mention of their name.

U Square Gwangju Bus Terminal in Seogu, Gwangju, was the most popular destination point nationwide. Please note that you should be careful with pronunciation if you visit Gwangju for the first time. This is not Usuk Hair.

Gimpo Domestic Airport and Jeju International Airport landed at the second and third places in a list of top destination points. For reference, the Gimpo-Jeju route is one of the most crowded flight paths “in the world”, not in Korea.

Daejeon Station, Dongdaegu Station, Incheon International Airport Terminal 1, Busan Station, Seoul Station, and Gwangmyeong Station followed. In most cases, airports, bus terminals, and railroad stations were in the upper ranks of top destination points. This means people took a taxi to depart to somewhere. Under the assumption that people’s life is the same for everyone, there would be two types: having lots of bags or being late for a flight, a bus or a train.

Top 50 departure points on Kakao T Taxi nationwide

No	Departure	Location	No	Departure	Location
1	Itaewon Station Line 6	 Yongsan, Seoul	26	Dongil BLDG	 Seocho, Seoul
2	KT&G Sangsangmadang	 Mapo, Seoul	27	Hapjeong Station Exit 8	 Mapo, Seoul
3	Mirae Asset Center 1 BLDG	 Junggu, Seoul	28	Jungheung S-Class Sky 31	 Seogu, Gwangju
4	Itaewon Tourist Information Center	 Yongsan, Seoul	29	Halla Vivaldi Studio 422	 Busanjin, Busan
5	Conrad Seoul	 Yeongdeungpo, Seoul	30	Suseo Station SRT Exit 3	 Gangnam, Seoul
6	Itaewon 119 Safety Center	 Yongsan, Seoul	31	Dongtan Station	 Hwaseong, Gyeonggi
7	Gimpo International Airport Domestic Terminal	 Gangseo, Seoul	32	Sinsa Station Exit 8	 Gangnam, Seoul
8	Gangnam Finance Center	 Gangnam, Seoul	33	Ramada Plaza Jeju	 Jeju, Jeju
9	Seoul Central District Prosecutors' Office	 Seocho, Seoul	34	Gasan Digital Complex Station Exit 6	 Geumcheon, Seoul
10	Jonggak Station Exit 12	 Jongno, Seoul	35	Yeosu Woongcheon Sarangeuro Booyoung 2-cha Apt	 Yeosu, Jeolla
11	Hongik Univ. Station Exit 9	 Mapo, Seoul	36	Samsung Electronics Hwaseong Campus H3	 Hwaseong, Gyeonggi
12	H Square Building N	 Seongnam, Gyeonggi	37	Signature Tower	 Junggu, Seoul
13	Andong City Hall	 Andong, Gyeongbuk	38	KGIT Center	 Mapo, Seoul
14	Residence Likehome	 Yeonsu-gu, Incheon	39	Grand Intercontinental Seoul Parnas	 Gangnam, Seoul
15	CGV Gangnam	 Gangnam, Seoul	40	Sangam Hanhwa Obelisk Officetel	 Mapo, Seoul
16	Dongtan Station SRT Exit 2	 Hwaseong, Gyeonggi	41	Yeouido Station Exit 3	 Yeongdeungpo, Seoul
17	Cheonan Asan Station	 Asan, Chungnam	42	Incheon Int'l Airport Terminal 1	 Junggu, Incheon
18	Novotel Ambassador Seoul Yongsan	 Yongsan, Seoul	43	State Tower Namsan	 Junggu, Seoul
19	Samsung Electronics Dormitory	 Yongin, Gyeonggi	44	Sheraton Seoul Palace Gangnam Hotel	 Seocho, Seoul
20	Sadang Station Exit 5	 Gwanak, Seoul	45	Gangnam Station Exit 5	 Seocho, Seoul
21	Maemuldo Ferry Terminal	 Geoje, Gyeongnam	46	Huimang Dream Apt	 Donghae, Gangwon
22	One IFC	 Yeongdeungpo, Seoul	47	Jeju International Airport	 Jeju, Jeju
23	Seoul Square	 Junggu, Seoul	48	Daeseung BLDG	 Seocho, Seoul
24	LG Twin Tower	 Yeongdeungpo, Seoul	49	Cheonan Asan Station Exit 1	 Asan, Chungnam
25	Samsung Electronics Service Center Hongdae	 Mapo, Seoul	50	Giordano Gangnam	 Seocho, Seoul

Based on services completed from Jul. 2018 to Jun. 2019

Top 50 destination points on Kakao T Taxi nationwide

No	Destination	Location
1	U Square Gwangju Bus Terminal	 Seogu, Gwangju
2	Gimpo International Airport Domestic Terminal	 Gangseo, Seoul
3	Jeju International Airport	 Jeju, Jeju
4	Daejeon Station	 Dongju, Daejeon
5	Dongdaegu Station	 Dongju, Daegu
6	Incheon Int'l Airport Terminal 1	 Junggu, Incheon
7	Busan Station	 Dongju, Busan
8	Seoul Station	 Yongsan, Seoul
9	Gwangmyeong Station	 Gwangmyeong, Gyeonggi
10	Gwangju Songjeong Station	 Gwangsan, Gwangju
11	Suwon Station Line 1	 Suwon, Gyeonggi
12	Daejeon Terminal Complex	 Dongju, Daejeon
13	Wonju Intercity Bus Terminal	 Wonju, Gangwon
14	Cheonan Asan Station	 Asan, Chungnam
15	Cheongju Intercity Bus Terminal	 Cheongju, Chungbuk
16	Gumi Station	 Gumi, Gyeongbuk
17	Galleria Timeworld	 Seogu, Daejeon
18	Suseo Station	 Gangnam, Seoul
19	Cheonan Express Bus Terminal	 Cheonan, Chungnam
20	Yongsan Station	 Yongsan, Seoul
21	Suwon Station	 Suwon, Gyeonggi
22	Suwon Bus Terminal	 Suwon, Gyeonggi
23	Incheon Terminal	 Michuhol, Incheon
24	Osong Station	 Cheongju, Chungbuk
25	Gimpo International Airport International Terminal	 Gangseo, Seoul

No	Destination	Location
26	Beomgye Station Line 4	 Anyang, Gyeonggi
27	Jeju City Hall	 Jeju, Jeju
28	Jeonju Bus Terminal	 Jeonju, Jeonbuk
29	Pyeongtaek Station	 Pyeongtaek, Gyeonggi
30	Incheon Int'l Airport Terminal 2	 Junggu, Incheon
31	Hongik Univ. Station Line 2	 Mapo, Seoul
32	Seoul Express Bus Terminal	 Seocho, Seoul
33	Iksan Station	 Iksan, Jeonbuk
34	Dong Seoul Bus Terminal	 Gwangjin, Seoul
35	Jeonju Station	 Jeonju, Jeonbuk
36	Gangnam Station Line 2	 Gangnam, Seoul
37	Bupyeong Station Line 1	 Bupyeong, Incheon
38	Gangleung Intercity Bus Terminal	 Gangleung, Gangwon
39	Gimhae International Airport	 Gangseo, Busan
40	Ulsan Station	 Ulju, Ulsan
41	Seodaejeon Station	 Junggu, Daejeon
42	Ansan Bus Terminal	 Ansan, Gyeonggi
43	Jeonju Express Bus Terminal	 Jeonju, Jeonbuk
44	Suseo Station SRT Exit 1	 Gangnam, Seoul
45	Indeogwon Station Line 4	 Anyang, Gyeonggi
46	Daegu International Airport	 Dongju, Daegu
47	Hyundai Department Store Ulsan	 Namgu, Ulsan
48	Jamsil Station Line 2	 Songpa, Seoul
49	Itaewon Station Line 6	 Yongsan, Seoul
50	Sangnoksu Station Line 4	 Ansan, Gyeonggi

Based on services completed from Jul. 2018 to Jun. 2019

[Seoul] Sleepless city

Itaewon was the most popular departure point in Seoul. As mentioned above, most taxi calls came from Itaewon Station nationwide as well as in Seoul. Itaewon Tourist Information Center, just a stone's throw from Itaewon Station, and Itaewon 119 Safety Center ranked fourth and fifth. This shows the splendor of Itaewon Freedom.

Central places in Seoul including KT&G Sangsangmadang in Hongdae, Euljiro's new landmark Mirae Asset Center 1 BLDG, Conrad Seoul in Yeouido and Jonggak Station in the downtown area were in the upper ranks. All of them have a huge floating population. We can picture people here laughing, talking and drinking cheerfully or whimpering and crying out loud and then riding a taxi home. What a sleepless city!

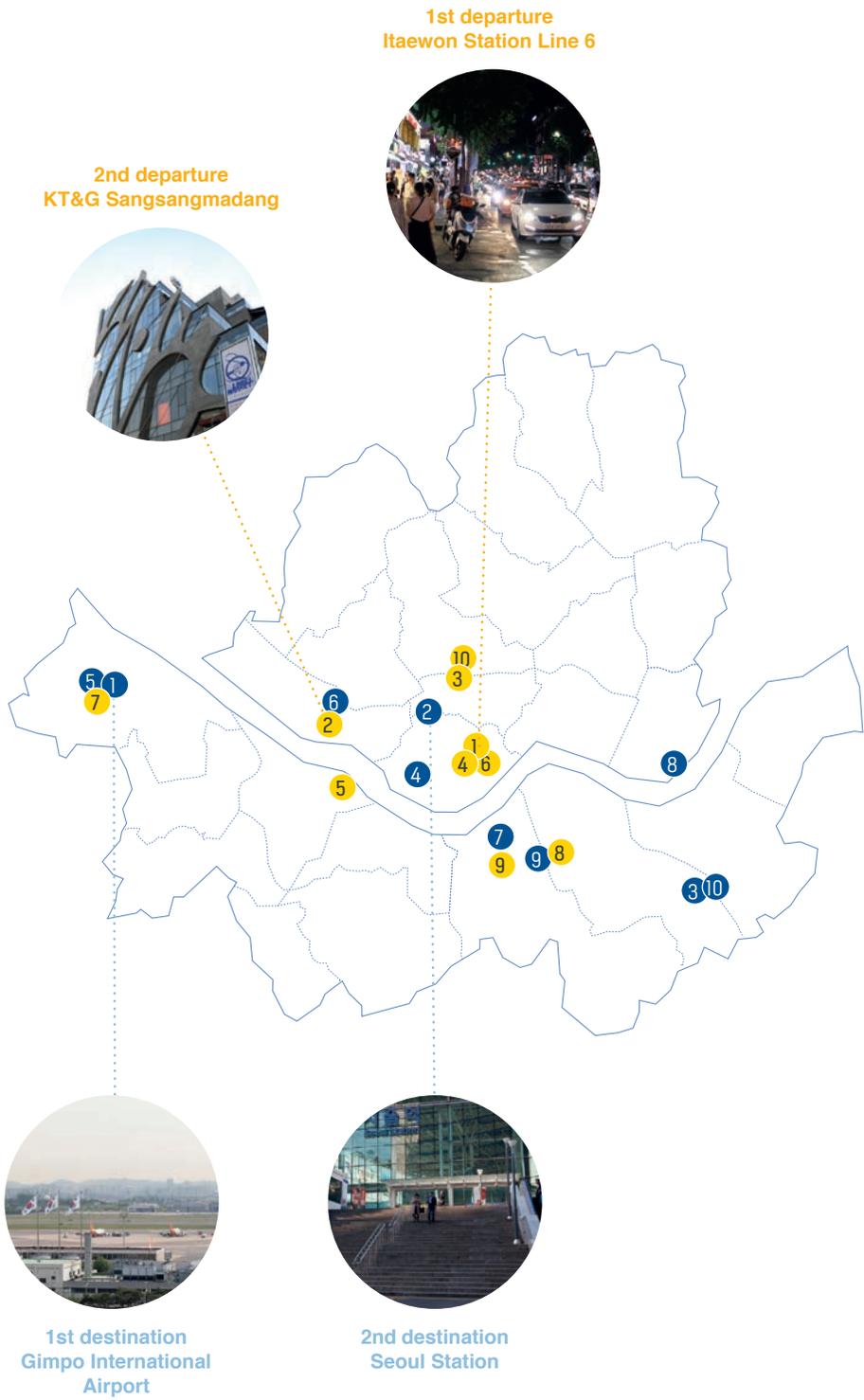
Unlike top departure points in the downtown area, major transportation points including airports, railroad stations, subway stations and bus terminals were in the upper ranks of top destination points. Gimpo International Airport took first place, followed by Seoul Station, Suseo Station, and Yongsan Station. In particular, Suseo Station sharply moved up from last year's place as SRT users has increased.

Top 10 departure and destination points on Kakao T Taxi in Seoul

No	Departure	Location
1	Itaewon Station Line 6	 Yongsan
2	KT&G Sangsangmadang	 Mapo
3	Mirae Asset Center 1 BLDG	 Junggu
4	Itaewon Tourist Information Center	 Yongsan
5	Conrad Seoul	 Yeongdeungpo
6	Itaewon 119 Safety Center	 Yongsan
7	Gimpo International Airport Domestic Terminal	 Gangseo
8	Gangnam Finance Center	 Gangnam
9	Seoul Central District Prosecutors' Office	 Seocho
10	Jonggak Station Exit 12	 Jongno

No	Destination	Location
1	Gimpo International Airport Domestic Terminal	 Gangseo
2	Seoul Station	 Yongsan
3	Suseo Station	 Gangnam
4	Yongsan Station	 Yongsan
5	Gimpo International Airport International Terminal	 Gangseo
6	Hongik Univ. Station Line 2	 Mapo
7	Seoul Express Bus Terminal	 Seocho
8	Dong Seoul Bus Terminal	 Gwangjin
9	Gangnam Station Line 2	 Gangnam
10	Jamsil Station Line 2	 Songpa

Based on services completed from Jul. 2018 to Jun. 2019



[Busan]

Hey, where is the best place to shop in Busan?

Halla Vivaldi Studio 422 was the most popular departure point in Busanjin-gu, Busan, followed by Haeundae Doosan We've the Zenith and The Blue. While most calls were made in the downtown area in Seoul, it was in the residential districts like apartments and officetels in Busan.

Park Hyatt Busan and Hilton Busan were in the upper ranks. This means foreign tourists as well as local people hailed a taxi. Visitors to Park Hyatt Busan located right next to the Yacht Marina in Haeundae can feel the exotic atmosphere.

Busan Station was the most popular destination point in Busan, followed by Gimhae International Airport and Lotte Department Store Busan. While most top departure points were users' home, different locations including railroad stations, bus terminals and department stores were among top destination points.

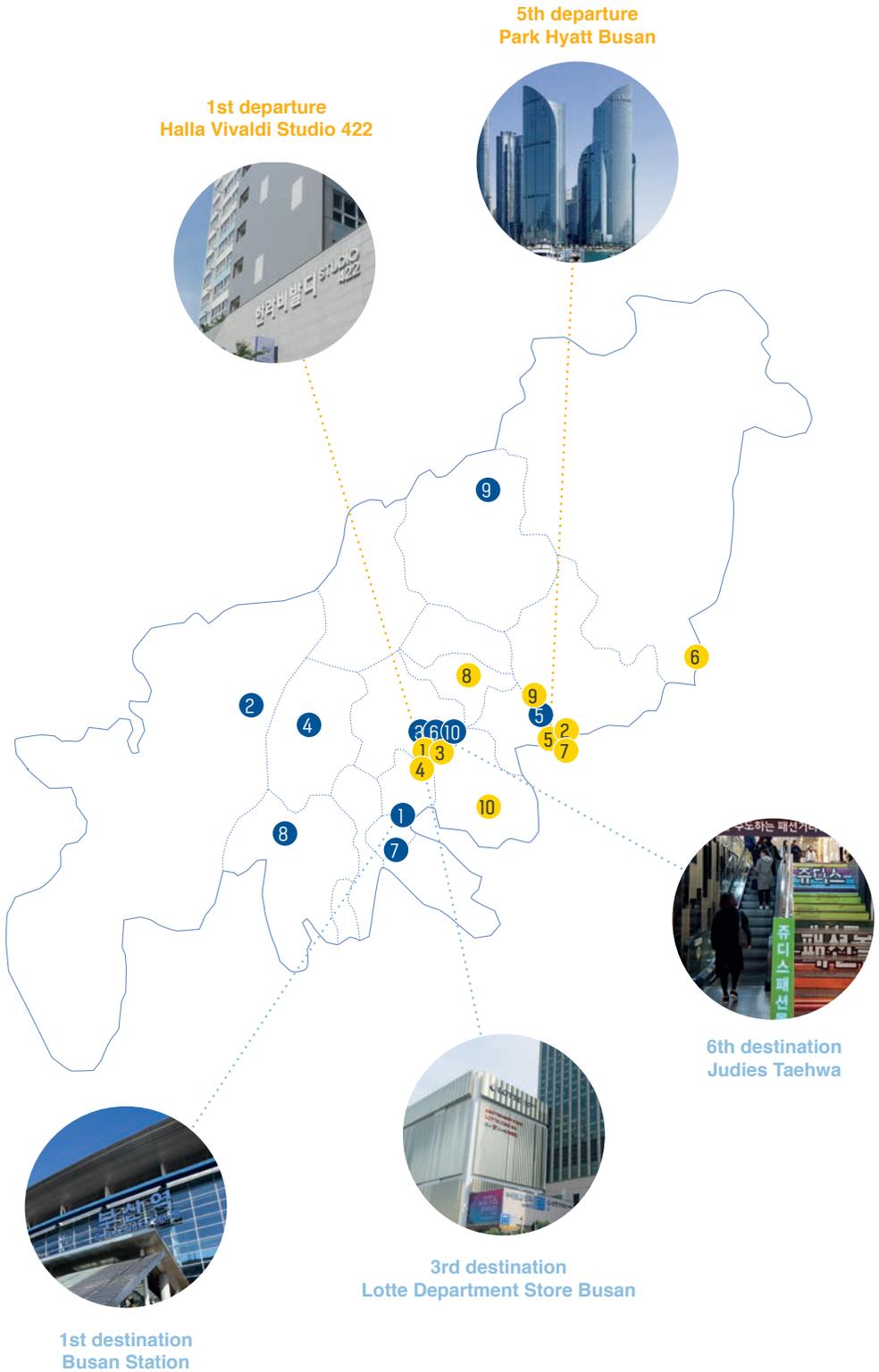
It was the most noticeable that Busan Department Store ranked third and seventh like a city of Lotte. Shinsegae Centum City in the fifth place was registered as the world's largest department store in the Guinness Book of Records. Please shop carefully at a city of shopping.

Top 10 departure and destination points on Kakao T Taxi in Busan

No	Departure	Location
1	Halla Vivaldi Studio 422	 Busanjin
2	Haeundae Doosan We've the Zenith	 Haeundae
3	The Blue	 Busanjin
4	Seomyeon DS Elysian Apt.	 Busanjin
5	Park Hyatt Busan	 Haeundae
6	Hilton Busan	 Gijang
7	Hanil Ordeu Officetel	 Haeundae
8	Cube I officetel	 Yeonje
9	The Sharp Centum Star Apt.	 Haeundae
10	Yongdang Navy Housing	 Namgu

No	Destination	Location
1	Busan Station	 Donggu
2	Gimhae International Airport	 Gangseo
3	Lotte Department Store Busan	 Busanjin
4	Busan Seobu Intercity Bus Terminal	 Sasang
5	Shinsegae Centum City	 Haeundae
6	Judies Taehwa	 Busanjin
7	Lotte Department Store Gwangbok	 Junggu
8	Hadan Station Busan Line 1	 Saha
9	Busan Central Bus Terminal	 Geumjeong
10	NC Department Store Seomyeon	 Busanjin

Based on services completed from Jul. 2018 to Jun. 2019



[Daegu]

Daegu Samdeok Fire Station is a link between you and I

Hwaseong Park Dream City in Jung-gu and Gyeseong High School at the foot of Mt. War-yong were the most popular departure points in Daegu. Daegu International Airport, Samdeok 119 Safety Center near Dongseong-ro, Hotel Inter-Burgo Exco, and Hotel Inter-Burgo Daegu were in the upper ranks.

It was remarkable that Gyeseong High School took second place because there were no landmarks and high floating population nearby. At this boarding school, parents who wanted to meet their children, students who wanted to go home or go to institute or students who wanted to skip classes seems to have hailed a taxi.

Dongdaegu Station and Daegu International Airport were the most popular destination points in Daegu as well. It turned out that these two major transportation points have played the role of a bridge that connects Daegu and other regions.

Samdeok 119 Safety Center in the third most popular destination is a landmark on the boulevard near Dongseong-ro located in the downtown area of Daegu. For reference, this ranked seventh of the most popular departure points. Please picture the scene where some people depart for a fire station and others meet there. This is really a “hot” fire station in many aspects.

Top 10 departure and destination points on Kakao T Taxi in Daegu

No	Departure	Location
1	Hwaseong Park Dream City	 Junggu
2	Gyeseong High School	 Seogu
3	Chimsan Taewang Honors Rodem	 Bukgu
4	Chimsan Hwasung Park Dream	 Bukgu
5	Daegu International Airport	 Donggu
6	Boutique City Drama	 Donggu
7	Samdeok 119 Safety Center	 Junggu
8	Hotel Inter-Burgo Exco	 Bukgu
9	Hotel Inter-Burgo Daegu	 Suseong
10	MH L First Opera Officetel	 Bukgu

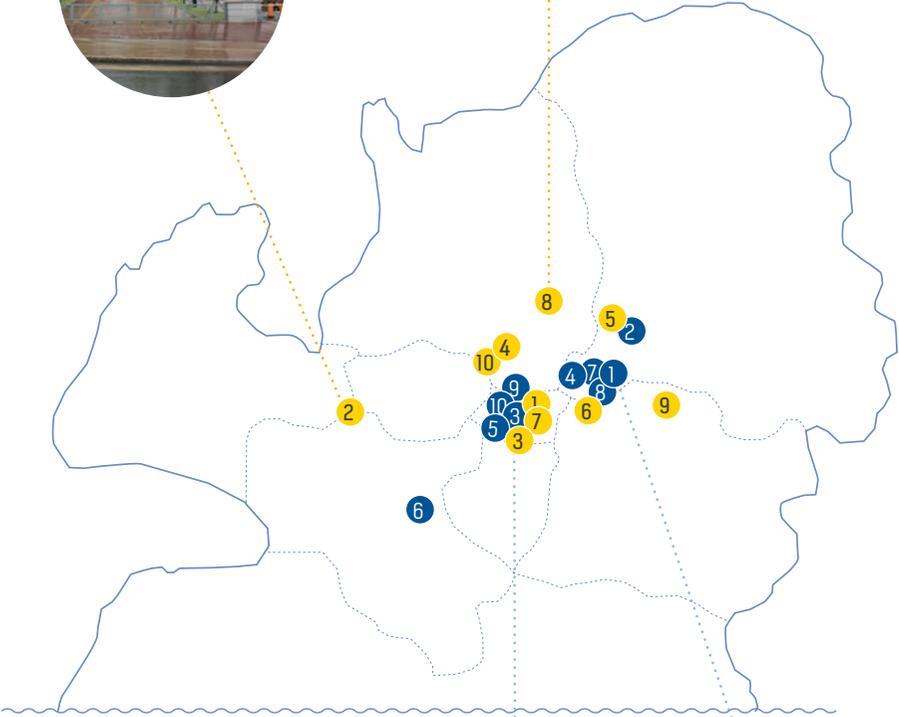
No	Destination	Location
1	Dongdaegu Station	 Donggu
2	Daegu International Airport	 Donggu
3	Samdeok 119 Safety Center	 Junggu
4	Shinsegae Department Store Daegu	 Donggu
5	Hyundai Department Store Daegu	 Junggu
6	Daegu Seobu Bus Terminal	 Namgu
7	Dongdaegu Station Intermodal Transfer Center	 Donggu
8	Dongdaegu Bus Terminal	 Donggu
9	Daegu Station	 Junggu
10	CGV Daegu Hanil	 Junggu

Based on services completed from Jul. 2018 to Jun. 2019

8th departure
Hotel Inter-Burgo Exco



2nd departure Gyeseong
High School



3rd destination
Samdeok 119 Safety Center



1st destination
Dongdaegu Station

[Incheon]

All roads lead to Incheon International Airport

Residence Likehome in Songdo was the most popular departure point in Incheon followed by Incheon Int'l Airport Terminal 1 and Lotus Plaza in Bupyeong. For reference, Lotus Plaza in the third, A Twosome Place Bupyeong in the sixth and Starbucks Bupyeong Rodeo in the eighth are all near Bupyeong Station Exit 7. You could guess how much Bupyeong is a hot place. As Seoul has Itaewon Station, Incheon has Bupyeong Station.

In the meantime, Yeonsu where there is the Songdo New City was also one of the top departure points. Residence Likehome and many landmarks nearby Technopark Station

and Campus Town Station on Line1 of the Incheon Subway were in the upper ranks. Can you hear this town's popularity rising? Yes, you can.

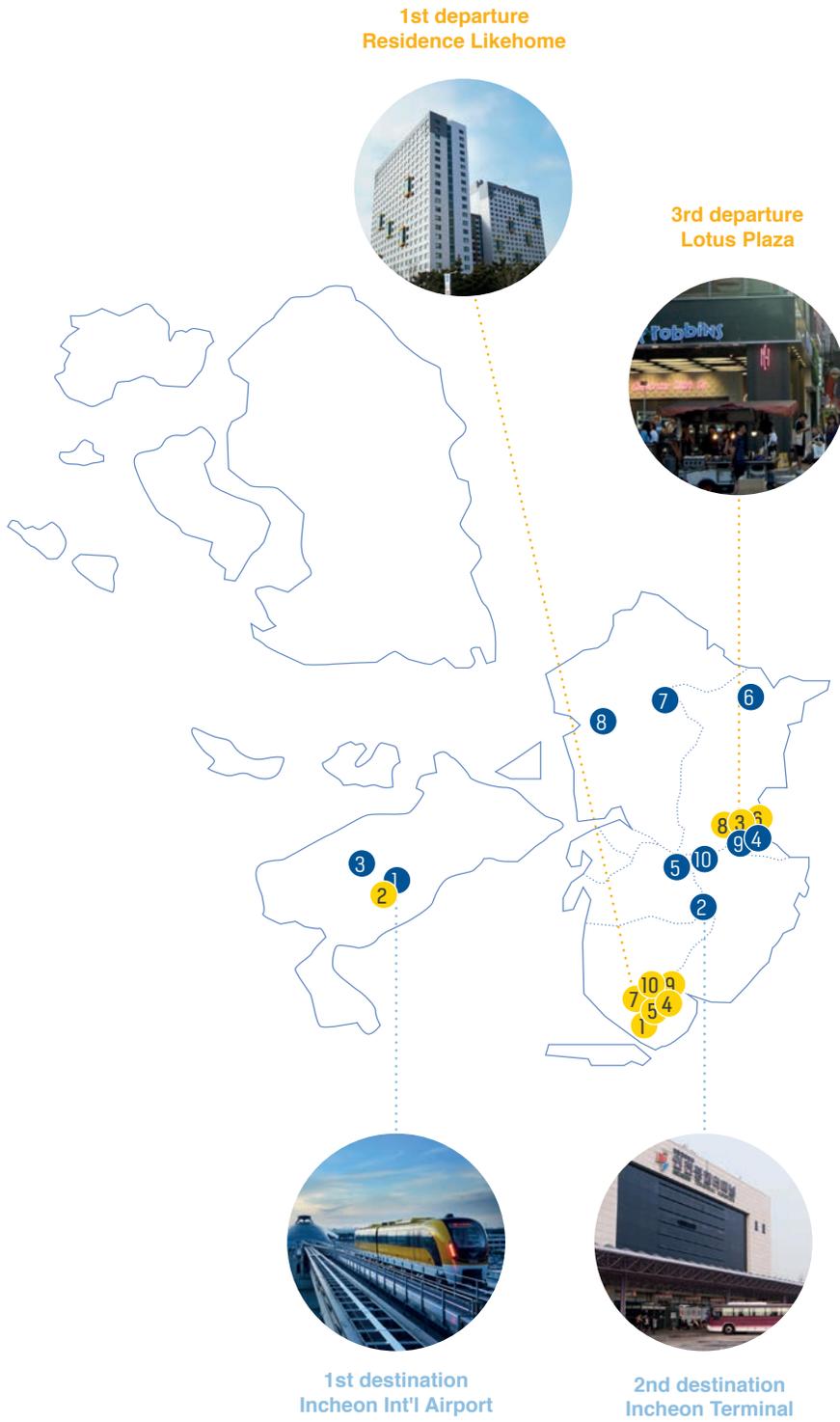
Incheon Int'l Airport Terminal 1 was definitely the most popular destination point in Incheon. Many places relating to Incheon Int'l Airport including Incheon Int'l Airport Terminal 2, Gyeyang Station, Geomam Station, and Cheongna International City Station were in the upper ranks. All roads lead to Rome, but if you are at the Incheon International Airport, it is a different story. All roads lead to the Incheon International Airport.

Top 10 departure and destination points on Kakao T Taxi in Incheon

No	Departure	Location
1	Residence Likehome	 Yeonsu
2	Incheon Int'l Airport Terminal 1	 Junggu
3	Lotus Plaza	 Bupyeong
4	Lotte Castle Campus Town	 Yeonsu
5	Technopark Station Exit 2	 Yeonsu
6	A Twosome Place Bupyeong	 Bupyeong
7	Technopark Station Exit 3	 Yeonsu
8	Starbucks Bupyeong Rodeo	 Bupyeong
9	Starbucks Songdo Campustown Station	 Yeonsu
10	LH Western Blue Hill Apt	 Seogu

No	Destination	Location
1	Incheon Int'l Airport Terminal 1	 Junggu
2	Incheon Terminal	 Michuhol
3	Incheon Int'l Airport Terminal 2	 Junggu
4	Bupyeong Station Line 1	 Bupyeong
5	Juan Station Line 1	 Michuhol
6	Gyeyang Station AREX	 Gyeyang
7	Geomam Station AREX	 Seogu
8	Cheongna International City Station	 Seogu
9	The Catholic University of Korea Incheon St. Mary's Hospital	 Bupyeong
10	Dongam Station Line 1	 Bupyeong

Based on services completed from Jul. 2018 to Jun. 2019



[Gwangju]

Usuk Hair(X), U Square(O)

Jungheung S-Class Sky 31 in Seogu was the most popular departure point in Gwangju. Seogu was crowded with many popular departure points including Nongseong Utop Ubless Apt, Central City Officetel and Sangmu Riche 1 Officetel.

Seogu U Square Gwangju Bus terminal was the most popular destination point. This took first place both within Gwangju and nationwide. Its original name was Gwangcheon Terminal, but was changed into U Square in 2006. For this reason, many local people still call this place as Gwangcheon Terminal or

Gwangcheon-dong Bus Terminal.

Gwangju Songjeong Station and NC Wave Department Store Chungjang took second and third respectively. Megabox Theater, Shinsegae Department Store, Chonnam National University and ex-City Hall Intersection in Donggu were in the list. While the list of top departure points were dominated by apartments and officetels, different types of places including universities, department stores and busy streets were in the list of top destination points.

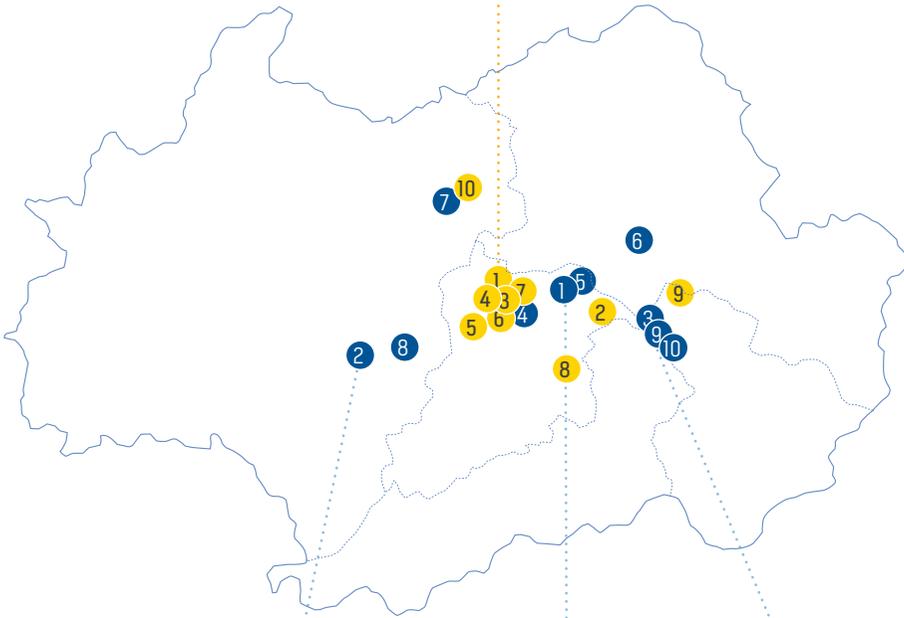
Top 10 departure and destination points on Kakao T Taxi in Gwangju

No	Departure	Location
1	Jungheung S-Class Sky 31	 Seogu
2	Nongseong Utop Ubless Apt	 Seogu
3	Central City Officetel	 Seogu
4	Sangmu Riche	 Seogu
5	Holiday Inn Gwangju	 Seogu
6	Goldenvill Officetel	 Seogu
7	Landpia Officetel	 Seogu
8	Lotte Mart World Cup	 Seogu
9	Gyelim Credit Coop Head Office	 Donggu
10	Sinchang City Development Corporation Apt	 Gwansan

No	Destination	Location
1	U Square Gwangju Bus Terminal	 Seogu
2	Gwangju Songjeong Station	 Gwansan
3	NC Wave Department Store Chungjang	 Donggu
4	Megabox Gwangju Sangmu	 Seogu
5	Shinsegae Gwangju	 Seogu
6	Jeonnam Gwangju Campus	 Bukgu
7	Suwan Police Substation	 Gwansan
8	Gwangju Airport	 Gwansan
9	ex-City Hall Intersection	 Donggu
10	Chonnam National University Hospital	 Donggu

Based on services completed from Jul. 2018 to Jun. 2019

**1st departure
Jungheung S-Class Sky 31**



**2nd destination
Gwangju Songjeong
Station**



**1st destination
U Square Gwangju
Bus Terminal**



**3rd destination NC
Wave Department
Store Chungjang**

[Daejeon]

A journey of a thousand miles begins at Yuseong-gu

Lotte City Hotel in Yuseong-gu was the most popular departure point in Daejeon, followed by LH Doan Cheonnyeonnamu 11-danji in Yuseong-gu and West Gate Shopping Center at Triple City 9-danji. Like Gwangju, Seogu was crowded with many top departure points.

KAIST Sejong Hall ranked sixth. This campus is so big, but transportation is relatively inconvenient. For this reason, many students and faculties use a taxi in the campus. Past and present students has appealed for a station on Line 2 of the Daejeon Subway nearby the campus.

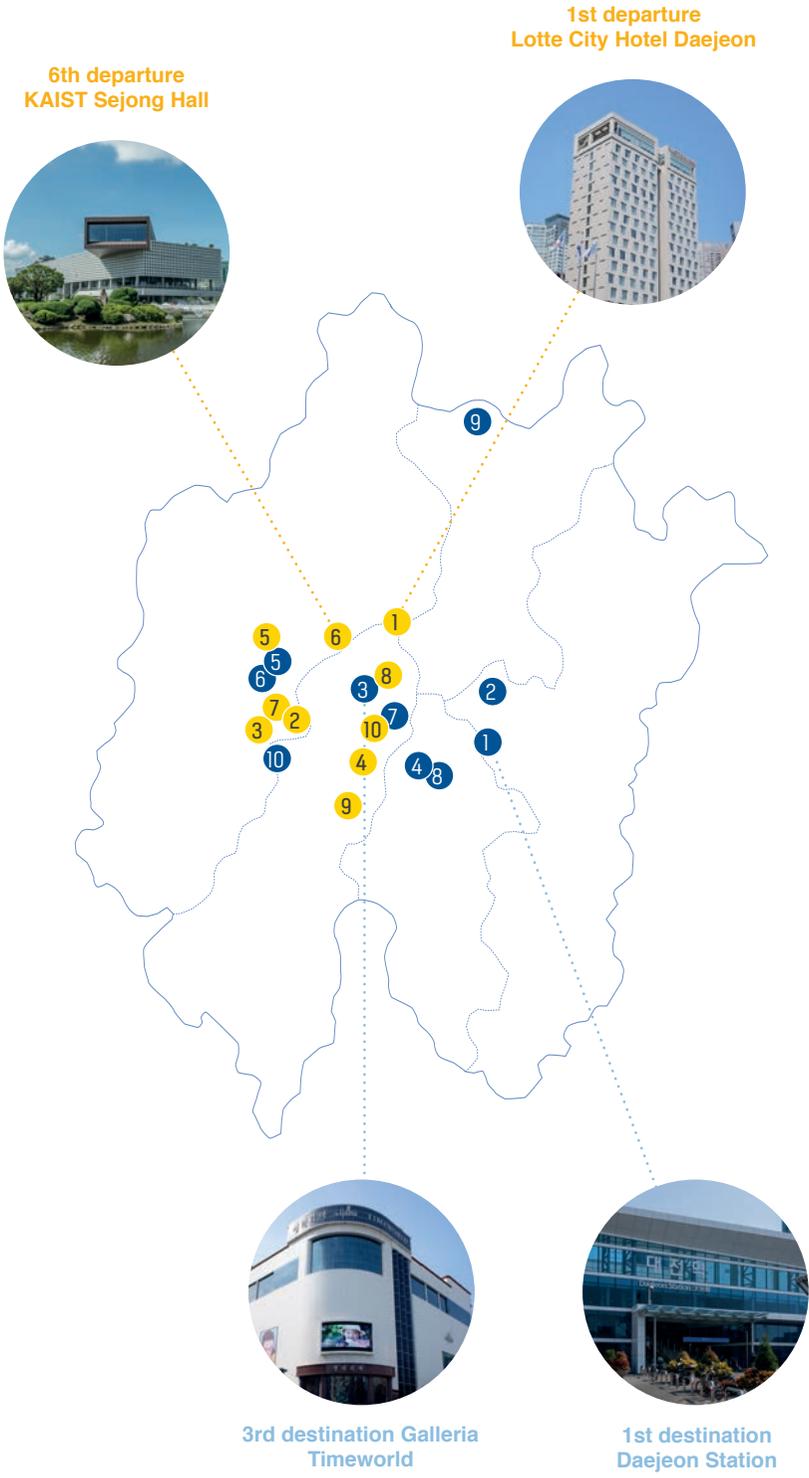
Daejeon Station in Donggu was the most popular destination in Daejeon, followed by Daejeon Terminal Complex in Donggu in the second and Galleria Timeworld in Seogu in the third, respectively. Top destination points included different places like railroad stations, bus terminals, department stores, and universities.

Top 10 departure and destination points on Kakao T Taxi in Daejeon

No	Departure	Location
1	Lotte City Hotel Daejeon	 Yuseong
2	LH Doan Cheonnyeonnamu 11-danji	 Yuseong
3	West Gate Shopping Center at Triple City 9-danji	 Yuseong
4	Donggi Forever Apt	 Seogu
5	Jukdong Cantavil Apt	 Yuseong
6	KAIST Sejong Hall	 Yuseong
7	Main Gate Shopping Center at Triple City 9-danji	 Yuseong
8	Honors Officetel	 Seogu
9	Daecheong Hospital	 Seogu
10	Goejeongdong Administrative Welfare Center	 Seogu

No	Destination	Location
1	Daejeon Station	 Donggu
2	Daejeon Terminal Complex	 Donggu
3	Galleria Timeworld	 Seogu
4	Seodaejeon Station	 Junggu
5	Yuseong Express Bus Terminal	 Yuseong
6	Yuseong Intercity Bus Stop	 Yuseong
7	Lotte Department Store Daejeon	 Seogu
8	SAY Department Store	 Junggu
9	Sintanjin Station	 Daeduk
10	Mokwon University	 Seogu

Based on services completed from Jul. 2018 to Jun. 2019



[Ulsan] It's TiTanium. You Idiot!

Samsan Koaroo Belache was the most popular departure point in Ulsan. This is in the downtown of Ulsan, where there are shopping malls for furniture nearby and restaurants, bars and motels across the road. Many officetels and apartments in Namgu and Junggu were in the upper ranks.

Ulsan KTX Station took first place of top destination points. The 18-ton of huge titanium whale sculpture in front of the station is worth seeing. For reference, Ant-Man villain Yellowjacket suit is also made of titanium. As Ant-Man tried to pry the cover off, "It's TiTanium. You Idiot!" Yellowjacket said.

The largest shopping mall Up Square in Namgu took fifth place of top destination points. CGV, Kyobo Book Centre and many clothing stores and restaurants are at the mall. Ulsan's hippest Design Street is on the backstreets.

Taehwagang Station took seventh of top destination points. It was previously named Ulsan Station until 2010. Mugunghwa train still stops there with many passengers, instead of KTX. The Ulsan-Busan line is being upgraded to an electrified double-track railway. If it's completed, more passengers are expected to use it.

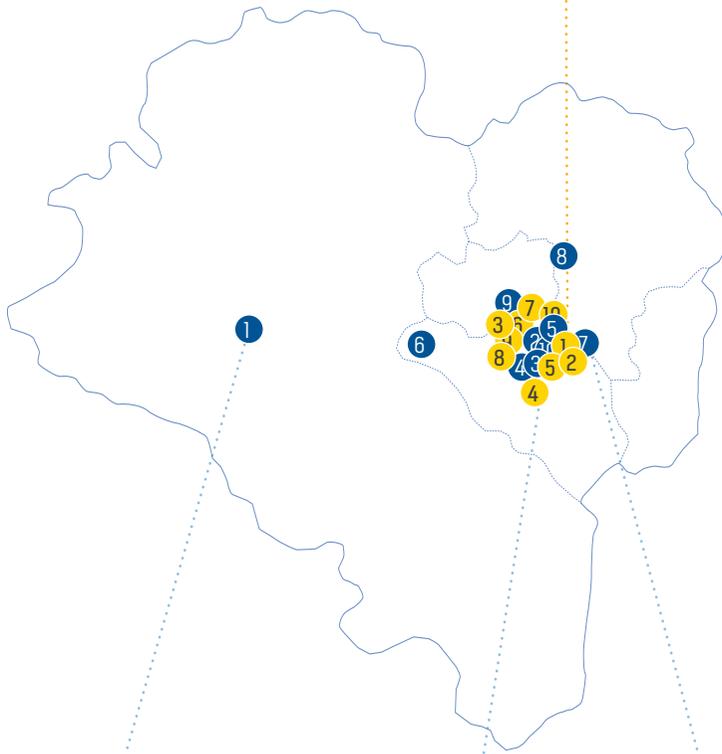
Top 10 departure and destination points of Kakao T Taxi in Ulsan

No	Departure	Location
1	Samsan Koaroo Belache	 Namgu
2	Hyundai Munhwa 2-cha Apt	 Namgu
3	Taehwagang River Terrace	 Namgu
4	Seonam Echo Heights Apt	 Namgu
5	Hyundai Munhwa 1-cha Apt	 Namgu
6	Taehwagang Exordium	 Junggu
7	Beonyeong-ro Dream Park	 Junggu
8	Dal-dong Samjeong Green Core Apt	 Namgu
9	Sinjeong Gwell Apt	 Namgu
10	Hyundai Grand Mansion	 Junggu

No	Destination	Location
1	Ulsan Station	 Uiju
2	Hyundai Department Store Ulsan	 Namgu
3	Ulsan Intercity Bus Terminal	 Namgu
4	Lotte Department Store Ulsan	 Namgu
5	Up Square	 Namgu
6	Ulsan University	 Namgu
7	Taehwagang Station	 Namgu
8	Ulsan Airport	 Bukgu
9	Lotte Cinema Ulsan Seongnam	 Junggu
10	Ulsan Express Bus Terminal	 Namgu

Based on services completed from Jul. 2018 to Jun. 2019

1st departure
Samsan Koaroo Belache



1st destination
Ulsan Station



5th destination
Up Square



7th destination
Taehwagang Station

People want
different mobility
services



Diversified travel demands create new services

When we think about a taxi, a mid-sized sedan with its roof top light comes to our mind. Mid-sized taxis like Hyundai Sonata and KIA K5 account for 98.7% taxis being operated nationwide¹⁾. Considering different travel demands from commuting to going on a business trip, travelling with kids or the disabled, leisure travelling and sightseeing tours, only limited types of services are available until now.

A wind of change is blowing through such a boring taxi market. In addition to existing deluxe taxis and large-sized taxis, different services like the premium taxi Kakao T Black in November 2015, Kakao T for Business for corporate clients in April 2018, the AI-based matching service Smart Call in April 2018 and Waygo Blue without taxi drivers' refusal to take a passenger in March 2019 have been introduced and loved by customers.

A demand for different mobility services is found in data. As special taxi call ratio is continuously growing, it is approaching 10% of total calls on Kakao T Taxi recently. This part looks into how people use new services that meet the demand for different types of travel other than regular mid-sized taxis.

Diversified service call ratio on Kakao T Taxi



Combined call ratio from deluxe taxi, large-sized taxi, Kakao T Black taxi, Smart Call, Waygo Blue, and Kakao T for Business

1) Based on no. of taxis and drivers at the end of June 2019 from the Korea National Joint Conference of Taxi Association (August, 2019)

A more comfortable deluxe taxi

A deluxe taxi provides more comfortable space and kinder services than a mid-sized taxi. Instead, its fare is 40% higher on average. Now, there are about 1,800 deluxe taxis mainly in the capital area including Seoul, Incheon and Gyeonggi.

A deluxe taxi is a bit different from a regular mid-sized taxi in its operating pattern. A deluxe taxi is mainly used for the business purpose. Mirae Asset Center 1 BLDG and Gangnam Finance Center were the most popular departure points of deluxe taxis. The two buildings are occupied by many global consulting firms, financial companies, and multinational companies.

Top destination points include Mirae Asset Center 1 BLDG, Seoul Station, and Gimpo International Airport International Terminal. Airports and railroad stations as well as large offices and hotels were in the upper ranks.

Top departure and destination points of a deluxe taxi on Kakao T Taxi

No	Departure	Location
1	Mirae Asset Center 1 BLDG	 Junggu, Seoul
2	Gangnam Finance Center	 Gangnam, Seoul
3	State Tower Namsan	 Junggu, Seoul
4	Hanjin BLDG	 Junggu, Seoul
5	Signature Tower	 Junggu, Seoul
6	Conrad Seoul	 Yeongdeungpo, Seoul
7	Seoul Finance Center	 Junggu, Seoul
8	Posco Tower Yeoksam	 Gangnam, Seoul
9	D Tower	 Jongno, Seoul
10	SK BLDG	 Jongno, Seoul

No	Destination	Location
1	Mirae Asset Center 1 BLDG	 Junggu, Seoul
2	Seoul Station	 Yongsan, Seoul
3	Gimpo International Airport International Terminal	 Gangseo, Seoul
4	Incheon Int'l Airport Terminal 2	 Junggu, Incheon
5	Incheon Int'l Airport Terminal 1	 Junggu, Incheon
6	Seoul Finance Center	 Junggu, Seoul
7	Gimpo International Airport Domestic Terminal	 Gangseo, Seoul
8	Conrad Seoul	 Yeongdeungpo, Seoul
9	Suseo Station	 Gangnam, Seoul
10	Grand Hyatt Seoul	 Yongsan, Seoul

Based on services completed from Jul. 2018 to Jun. 2019

A spacious large-sized Taxi

There is a special taxi frequently used by leisure or business travellers. This is a large-sized taxi called a “jumbo taxi.” Sometimes, several suitcases should be carried for a trip to a remote place. Sometimes, we should ride a taxi with other passengers. In these cases, a large-sized taxi is more useful than a regular mid-sized taxi.

Last year, Gusan Station in Eunpyeong-gu Seoul, Doseonsa, a temple in Gangbuk-gu and Incheon Int'l Airport Terminal 1 were the most popular departure points of large-sized taxis. Many hotels in downtown Seoul were in the upper ranks as well.

Meanwhile, Incheon Int'l Airport Terminal 1 was the most popular destination point of a large-sized taxi. Airports, railroad stations, and subway stations located in the capital area were in the upper ranks.

Top departure and destination points of a large-sized taxi on Kakao T Taxi

No	Departure	Location
1	Gusan Station Line 6	 Eunpyeong, Seoul
2	Doseonsa	 Gangbuk, Seoul
3	Incheon Int'l Airport Terminal 1	 Junggu, Seoul
4	Byeoksan Live Park	 Gangbuk, Seoul
5	Lotte Hotel Seoul	 Junggu, Seoul
6	InterContinental Grand	 Gangnam, Seoul
7	Ambassador Seoul	 Junggu, Seoul
8	Alpharium Tower	 Seongnam, Gyeonggi
9	Royal Hotel Seoul	 Junggu, Seoul
10	Pacific Hotel	 Junggu, Seoul

No	Destination	Location
1	Incheon Int'l Airport Terminal 1	 Junggu, Incheon
2	Guro-gu Office	 Guro, Seoul
3	Dongtan Station	 Hwaseong, Gyeonggi
4	Jukjeon Station Bundang Line	 Yongin, Gyeonggi
5	Incheon Int'l Airport Terminal 2	 Junggu, Incheon
6	Pangyo Station Shinbundang Line	 Seongnam, Gyeonggi
7	Gwanggyo Station Shinbundang Line	 Suwon, Gyeonggi
8	Gimpo International Airport International Terminal	 Gangseo, Seoul
9	Myeongdong Station Line 4	 Junggu, Seoul
10	Jongno-gu Office	 Jongno, Seoul

Based on services completed from Jul. 2018 to Jun. 2019

Kakao T Black for a special day

Kakao T Black is a premium taxi-hailing service where a passenger can ride a luxurious comfortable vehicle with an engine capacity of 2,800 c.c. or more like KIA K9, Ssangyong Chairman and Mercedes-Benz E-Class. Since its introduction in November 2015, it has been providing comfortable services for passengers. In November 2018, a booking feature was added.

Like its high-end services, the fare is more than double of that of a regular taxi. However, the rich only does not use this service. Ordinary people use this service on a special day for a special person.

From November 2015 to June 2019, booking was made the most for the 14th of November, a day before the College Scholastic Ability Test was offered. The eve of holidays and Rose Day and Parents' Day were in the upper ranks. As we dine at a fine restaurant on a special day or spend a special day at a luxurious hotel, now we can choose a special taxi service.

Top 8 booked days on Kakao T Black

No	Date	Remarks
1	14 Nov. 2018	Eve of 2019 College Scholastic Ability Test Day
2	14 May 2019	Rose Day
3	13 Feb. 2018	Eve of Valentine's Day
4	1 Feb. 2019	Eve of Lunar New Year Holidays
5	31 Dec. 2018	2018 year-end
6	30 Jan. 2019	-
7	8 May 2019	Parents' Day
8	29 Apr. 2019	-

Based on services completed from Nov. 2018 to Jun. 2019

Kakao T Black Review

For a special person on a special day

I hailed Kakao T Black for my parents' Day

Kakao T Black user / Miss Lee (27yr, Seoul)

I booked a restaurant and prepared a carnation and some money for them, but I felt something was missing. It was the first Parents' Day since I got a job. I hope they will feel happy on that day. I also wanted to let them brag about their daughter, hahaha. Taking this opportunity, I decided to be good to my parents and tried the Kakao T Black service. They liked it more than I expected (My dad kept talking to the driver that he has to have a daughter. He must have been embarrassed...). I am thinking of calling the Black taxi for them even on an ordinary day.

On a birthday of my one and only love of life

Kakao T Black user / Mr. Park (32yr, Seongnam)

I have a girlfriend that turns me on like on the first date even if we have been dating for more than four years. (She is sooo adorable.) As I have been thinking of her birthday present for this year, Kakao T Black recently came to my mind. We were supposed to go to see a musical after work. I hailed the Black taxi in front of her office so that she could come to the theater easily. She was so happy with it and sent me more hearts than usual on KakaoTalk. (No no heart, don't overreact!)

On the way to see ultrasound photos of my first baby

Kakao T Black user / Mr. Lee (40yr, Seoul)

I rarely feel nervous, but on that day, I was so nervous. As my wife and I was getting ready to go to the clinic, I saw her face, and a hard time we had went through came to my mind. I wanted to make her feel better, so I called the Black taxi. All the way to the clinic, I held her hands. Thanks to Kakao T Black, we took a comfortable taxi ride and met our first baby together. Thank you

Smarter taxi with Smart Call

“Hey, Sangamdog!” people shout over the half-open window of a taxi. This is common during rush hour or nighttime or when a taxi demand is high. Since taxis are in chronically short supply in this time of day, some drivers refuse short or remote rides.

The “Smart Call” feature was born to help ease this problem. Kakao Mobility introduced the Smart Call service based on an AI matching system in April 2018. This service attempts a better matching by analyzing a user’s route, past operating patterns of a taxi driver and traffic conditions comprehensively based on machine learning.

A user should pay additional 1,000 won for this service, but this improves a chance of catching a taxi. The more taxi drivers take a smart call, the more incentives they would get. This produces a virtuous circle that can be satisfactory both for suppliers and providers.

Despite some controversies, this service has been continuously loved by passengers. Relevant calls increased 24.2% year on year.

**Smart Call
growth rate
on Kakao T Taxi**

24.2 %

—
Call based year-over-year growth rate
from April 10 to June 30, 2019

Waygo Blue

with no refusal and enhanced services

Tago Solutions, Kakao Mobility and over 50 taxi companies, spontaneously inspired by new innovation, launched Korea's first platform taxi model Waygo Blue in March 2019.

Waygo Blue taxi drivers do not refuse a passenger and pursue a safe and kind ride. They should join a training camp for one night and two days provided by a professional training company, and understand kindness, manners and service requirements. In addition, they prepare an air purifier and a smartphone charger to provide a clean and comfortable ride for passengers.

In a new system deployed for Waygo Blue, drivers receive a monthly salary. Conventional taxi drivers usually receive what is left after paying a certain amount of daily commission to taxi operators. This new system addresses some problems in the industry like drivers' refusal to pick up short-distance passengers, and helps drivers to constantly provide quality service for passengers.

Passengers' satisfaction for Waygo Blue is also higher than a regular taxi. While a regular taxi is 4.74 out of 5, Waygo Blue is 4.81. With a demand rise mainly in Seoul, more Waygo Blue taxis are being provided steadily.

**Waygo Blue customer
satisfaction score**

4.81

—
From March 20 to June 30, 2019

**Regular taxi customer
satisfaction score**

4.74

—
From March 20 to June 30, 2019

What does Waygo Blue mean to its taxi driver?

Waygo Blue driver Mr. Lee (50s, Seoul)

Q_ What made you start to drive Waygo Blue?

A_ I had driven a hired taxi for about twelve year. I got to know Waygo Blue and wanted to try, so I started.

Q_ How do you describe your drive dexperience?

A_ I felt a little bit awkward at the beginning because I had to automatically accept a call instead of choosing a call. I had a habit of accepting a good call. However, I learned the ropes after one month and felt really comfortable. I am now very happy with it. In a monthly salary system, I just work hard over a given time period, so I really feel comfortable.

Q_ What is the difference in a passenger's response from a regular taxi?

A_ It seems that passengers think highly of the Waygo Bue taxi drivers compared to regular taxi drivers. They think we are good and kind drivers. Many of them smiled when they got on a taxi. As they like our drivers, I also feel good and encouraged to work hard.

Q_ What made you start to drive Waygo Blue?

A_ I want to strongly recommend Waygo Blue. Earlier I felt stressed and pressured everyday because I had to cover the deficit if I failed to take enough passengers. Since I started to drive Waygo Blue, I have felt at ease when I work. Probably, that's why my income increased about 20%. Hopefully, more colleagues will drive Waygo Blue.

Kakao T for Business for busy businessmen

Riding a taxi is a must for office workers who have no time to lose to travel for business purposes. However, many of them still receive and paste with glue a receipt for submission every time they ride a taxi for outside work, business trips, overtime work, etc.

Kakao T for Business addresses this problem at once. They can just tap the app to hail a taxi and ride it. They do not have to pay with a credit card or submit a receipt for approval. Since its launch in February 2018, a number of companies have been using it.

Vice from General Affairs team using Kakao T Business

General Affairs team of Company S Mr. Park (30yr, Seoul)

Q_ How did you get to know Kakao T for Business?

A_ I am in the General Affairs team and join a social gathering with those who do a similar job. One day, one of them told how great Kakao T for Business was. General Affairs team members would feel the same way. Because we have so much account balance work to do, we want to reduce any of those burdens. Next day, I searched for Kakao T for Business and submitted a consulting request on the website. Kakao contacted me and we had a meeting. Finally, we closed a contract.

Q_ What kind of criteria do you have when you choose Kakao T for Business?

A_ Whether or not its service is available all over the nation was the most import part. Since my colleagues need to commute from and to the provinces or go to the provinces for outside work, whether or not it is available outside Seoul matters. Kakao T for Business was the only service that we can use easily anywhere in the nation. We were able to set available regions and time zones, which was a big plus.

Q_ Please tell us about the good points about Kakao T for Business.

A_ I work for a foreign company, so it was not easy to handle actual costs. For the last few years, employees submitted taxi receipts to the General Affairs team and then the team reviewed them one by one and transferred money to relevant bank account. Of course, they complained about this annoying work. Since we applied Kakao T for Business, we have been free from this work and have saved much time. Our employees frequently tell me that it is so convenient. The government imposes traffic impact contributions on designated facilities, but it offers up 20% exemptions to the Kakao T for Business users, reaching from hundreds of millions to billions won. Employees can get benefits and companies can enjoy cost reduction. It is like killing two birds with one stone.

INTERVIEW

Voice from Kakao T for Business customers

Sales team of Company M Mr. Gwak (40s, Seoul)

Q_ How did you know and use Kakao T for Business?

A_ Early this year, my company introduced Kakao T for Business. I was a big fan of Kakao T. I found out I could just push a button to use it for business purposes. It just took a few seconds to know how to use it even if they were not good at using a smartphone. Now, both my colleagues and I am using it everyday.

Q_ Please tell us about Kakao T for Business.

A_ Every time I worked outside, I pasted taxi receipt into A4 paper with glue and submitted them to the company. It took lots of time and they were easy to lose because they were so small. In many cases, I did not mind losing them in many cases because the amount was so small.

I feel better now with Kakao T for Business. I am in the sales team, but I do not have to take care of taxi costs when I have to frequently work outside. I can only focus on my work. Since available time and location is already set, I can freely ride a taxi. Especially when it is hot like this, I do not have to grab a taxi in the sun because I can hail a taxi in the office while getting ready. Saving glue costs is a bonus (laugh).

Diversified mobility services

People's demand for travel is getting diversified in different forms. Overseas mobility services are meeting such a demand one by one on their platform. They are realizing a vision of consolidated mobility services on a single app.

Since it launched Kakao T Taxi services first in March 2015, Kakao Mobility has introduced different forms of taxi services that customers wanted like Kakao T Black, Smart Call, Way-go Blue and Kakao T for Business. Its services are not limited to taxi services. It is offering a wide range of services by adding different services in the context of travel like Kakao Navi(Feb. 2016), Kakao T Driver(May 2016), Kakao T Parking(Oct. 2017) and recently Kakao T Bike(Mar. 2019). These services are creating a synergy effect and connecting citizen's travel life faster and more easily.

The Ministry of Land, Infrastructure and Transport announced the 'Taxi System Reform Measures for Innovative Growth and Collaborative Development' on the 17th of July after ministerial talks and a consultation between party members and government officials. This measure has opened a door to diversify taxi models, exterior, fare systems and more within a certain limitation. Away from monolithic regular taxi frame, the day of realizing different mobility services that customers want is coming soon. Kakao Mobility will narrowly observe every context of travel in our daily life and make more efforts to provide a variety of new pleasant services for customers.

**As the night goes on,
it is hard to catch a taxi**



When it is late at night, I want to go home

Many people have had difficulties in catching a taxi when they were desperate. Since taxi demand is greater than supply during morning or evening rush hours and late at night, some people cannot ride a taxi. Nighttime is the worst.

In the daytime, people can take another form of transportation like bus or subway when they fail to catch a taxi. When they are late for work, they should prepare for the boss's sermon. Anyway, they can go to work. However, in the nighttime, they have no choice but to ride a taxi. If they fail, they could not go home.

For this reason, they wait for a taxi forever or go home early. This cannot be an alternative. The government needs to find out when, where and why people cannot catch a taxi and find reasonable measures.

This part looks into where people failed to take a taxi nationwide during nighttime and where they wanted to go by taxi based on call data on Kakao T Taxi²⁾.

2) The data is on an analysis of Kakao T Taxi calls made by eup/myeon/dong nationwide from midnight to 3:00 AM on weekdays, from July 2018 to June 2019. When one passenger repeated a request to call a taxi, this was considered as one call. Please note that this part considerably supplements key contents of "Nighttime traffic condition analysis for citizens' better travel," authored by Sijeong Kim, Jaeho Lee, Sujin Baek, and Jeongmin Kim in December 2018 in Seoul Digital Foundation & Kakao Mobility.

Where is it hard to catch a taxi during nighttime?

Above all, where it was hard to catch a taxi during nighttime nationwide was observed. Passengers hailed a taxi on the Kakao T Taxi app, but taxi was not available due to lack of supply. This case was analyzed quantitatively, and relevant locations were ranked. Since analyzed data is an absolute amount of excessive demands from 3,500 regional units (eup/myeon/dong), there is a gap with the actual probability of catching a taxi upon request on the app. However, this data matches most of the regions that citizens think that are hard to catch a taxi.

There are absolutely many people in Seoul that cannot catch a taxi during nighttime. In particular, there was an excessive demand on both sides of Gangnam-daero at Gangnam Station in Yeoksam 1-dong (1st), Nonhyeon 1-dong (4th) and Seocho 4-dong (6th). Many people also could not catch a taxi during nighttime in the northern parts of Ganam-gu like Nonhyeon 2-dong(8th), Apgujeong-dong (10th), Cheongdam-dong (11th) and Sinsa-dong (12th). There is a war on a taxi every night in Gangnam, which is Korea's biggest business, entertainment and shopping district.

There was also an excessive demand during nighttime in Jongno 1·2·3·4 ga-dong (2nd) and Myeongdong (7th) connecting Gwanghwamun, Jongno and Uljiro. This

area is also crowded with business, entertainment and shopping facilities. Many people also could not catch a taxi during nighttime in Seogyo-dong(3rd) around Hongdae and Itaewon 1-dong (5th) around Itaewon Station where there are lots of clubs, restaurants and pubs.

There was an excessive demand outside Seoul in Seohyeon 1-dong, Seongnam-si, Gyeonggi (26th), Jeongja 1-dong (31st), Sampyeong-dong (38th), Ingye-dong, Suwon-si (27th), Yeongtong 3-dong (41st), Maesan-dong (43rd), Gwanggyo 1-dong (46th), Dongtan 1-dong, Hwaseong-si (37th), and Janghang 2-dong, Goyang-si (45th). Most regions are in the capital area and have many entertainment facilities in their business district or around subway stations.

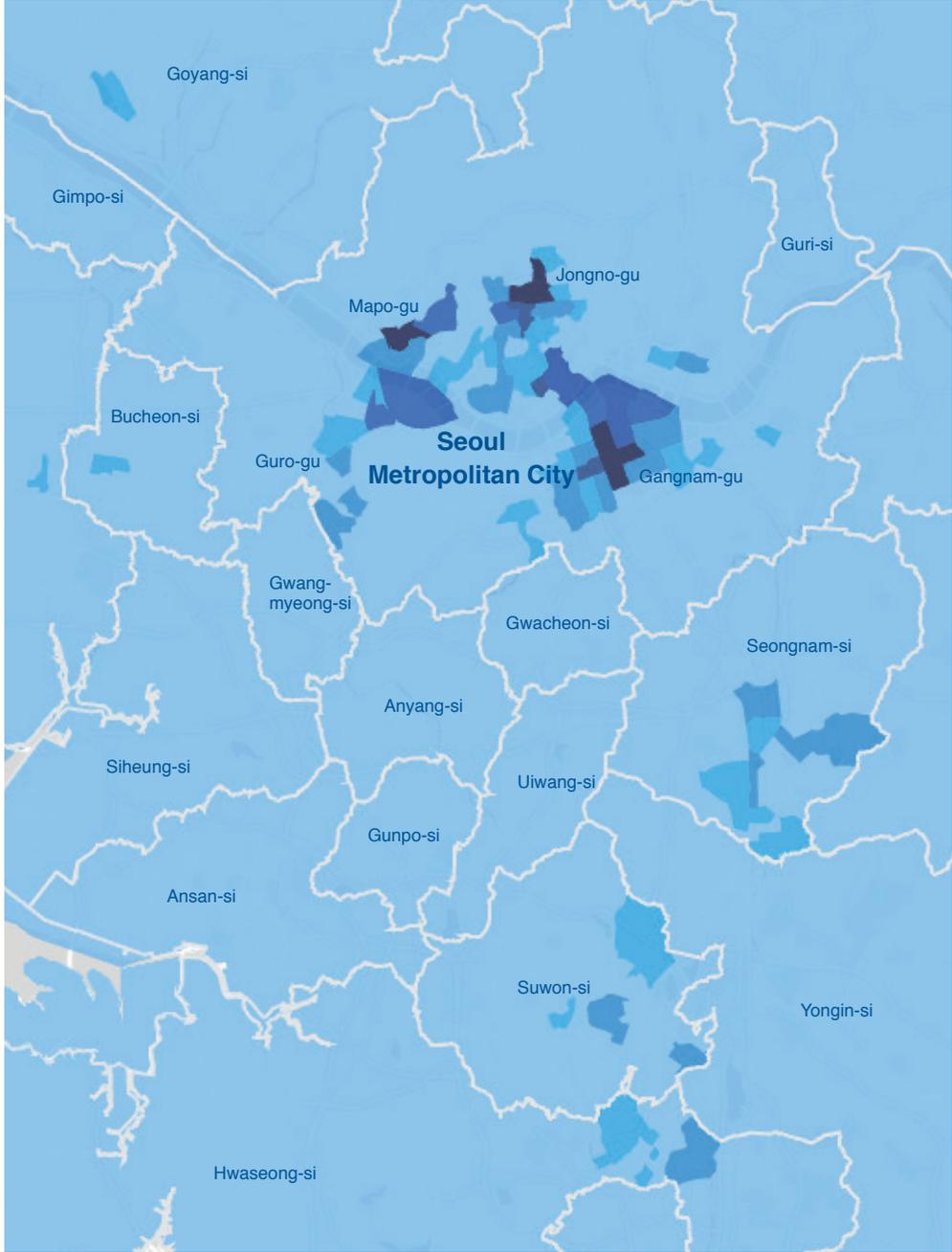
Other than the capital area, there was relatively no excessive demand during nighttime. Most people could not catch a taxi during nighttime in Bujeon 2-dong, Busanjin-gu (144th), Samdeok-dong, Junggu, Buan-si (226th), Bupyeong 5-dong, Bupyeong-gu, Incheon-si (50th), Chipyeong-dong, Seo-gu, Gwangju-si (67th), Oncheon 1-dong, Yu-seong-gu, Daejeon-si (188th), and Mugeo-dong, Nam-gu, Ulsan-si (572nd).

Regions with excessive demand during nighttime based on departure points

No	Departure	Location	No	Departure	Location
1	Yeoksam 1-dong	Gangnam, Seoul	26	Seohyeon 1-dong	Seongnam, Gyeonggi
2	Jongno 1-2-3-4 ga-dong	Jongno, Seoul	27	Ingye-dong	Suwon, Gyeonggi
3	Seogyo-dong	Mapo, Seoul	28	Guro 3-dong	Guro, Seoul
4	Nonhyeon 1-dong	Gangnam, Seoul	29	Sajik-dong	Jongno, Seoul
5	Itaewon 1-dong	Yongsan, Seoul	30	Euljiro-dong	Junggu, Seoul
6	Seocho 4-dong	Seocho, Seoul	31	Jeongja 1-dong	Seongnam, Gyeonggi
7	Myeongdong	Junggu, Seoul	32	Daechi 4-dong	Gangnam, Seoul
8	Nonhyeon 2-dong	Gangnam, Seoul	33	Yeoksam 2-dong	Gangnam, Seoul
9	Hannam-dong	Yongsan, Seoul	34	Hapjeong-dong	Mapo, Seoul
10	Apgujeong-dong	Gangnam, Seoul	35	Hwayang-dong	Gwangjin, Seoul
11	Cheongdam-dong	Gangnam, Seoul	36	Guro 5-dong	Guro, Seoul
12	Sinsa-dong	Gangnam, Seoul	37	Dongtan 1-dong	Hwaseong, Gyeonggi
13	Yeoui-dong	Yeongdeungpo, Seoul	38	Sampyeong-dong	Seongnam, Gyeonggi
14	Sinchon-dong	Seodaemun, Seoul	39	Gasam-dong	Geumcheon, Seoul
15	Sogong-dong	Junggu, Seoul	40	Seogang-dong	Mapo, Seoul
16	Yeongdeungpo-dong	Yeongdeungpo, Seoul	41	yeongtong 3-dong	Suwon, Gyeonggi
17	Seocho 3-dong	Seocho, Seoul	42	Jamwon-dong	Seocho, Seoul
18	Gwanghui-dong	Junggu, Seoul	43	Maesan-dong	Suwon, Gyeonggi
19	Namyeong-dong	Yongsan, Seoul	44	Pil-dong	Junggu, Seoul
20	Seocho 2-dong	Seocho, Seoul	45	Janghang 2-dong	Goyang, Gyeonggi
21	Hoehyeon-dong	Junggu, Seoul	46	Gwanggyo 1-dong	Suwon, Gyeonggi
22	Samseong 2-dong	Gangnam, Seoul	47	Jamsilbon-dong	Songpa, Seoul
23	Banpo 1-dong	Seocho, Seoul	48	Itaewon 2-dong	Yongsan, Seoul
24	Hangangno-dong	Yongsan, Seoul	49	Daechi 2-dong	Gangnam, Seoul
25	Samseong 1-dong	Gangnam, Seoul	50	Bupyeong 5-dong	Bupyeong, Incheon

Based on weekdays from Jul. 2018 to Jun. 2019

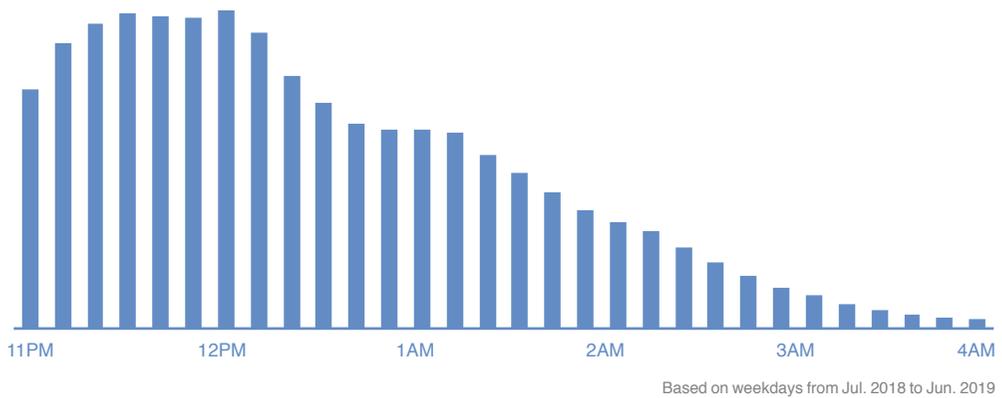
Regions with excessive demand during nighttime based on departure points



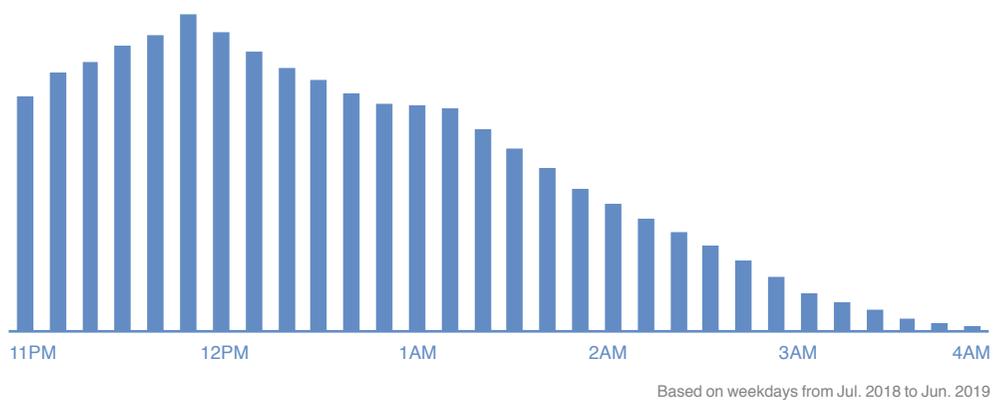
Based on weekdays from Jul. 2018 to Jun. 2019

The time distribution of passengers' excessive demands during nighttime was different depending on the regions. The midnight demand was the highest in Yeoksam 1-dong around Gangnam Station where there are both business and entertainment facilities, and Jongno 1·2·3·4 ga-dong in the downtown area. Meanwhile, Seogyo-dong around Hongdae which is one of the hottest places in Seoul showed one more peak demand after 1 AM. Itaewon 1-dong showed its peak after 2 AM. In Itaewon, midnight is early evening time.

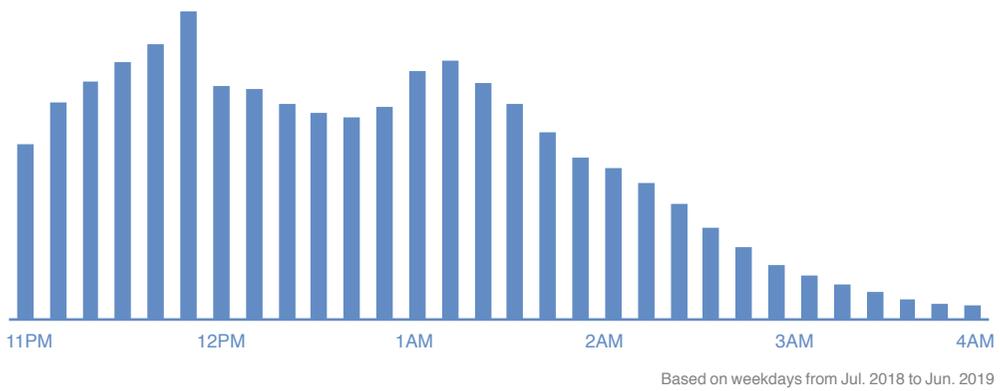
Time distribution of excessive demand for a taxi in Yeoksam 1-dong



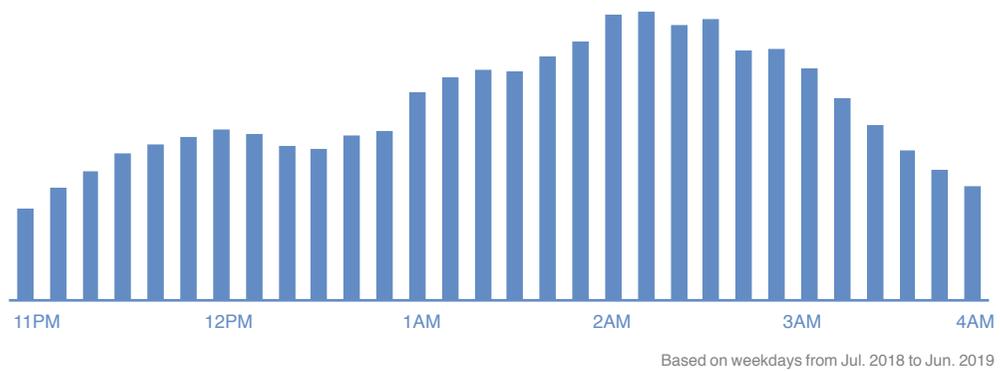
Time distribution of excessive demand for a taxi in Jongno 1·2·3·4 ga-dong



Time distribution of excessive demand for a taxi in Seogyo-dong



Time distribution of excessive demand for a taxi in Itaewon 1-dong



Where they wanted to go by taxi

Where did people want to go before they failed to hail a taxi? Likewise, data of failed call to hail a taxi by about 3,500 regional units (eup/myeon/dong) nationwide was analyzed.

Gangnam, Seoul absolutely had a number of destination points with an excessive demand for a taxi. Yeoksam 1-dong (1st), Nonhyeon 1-dong (2nd), Cheongdam-dong (8th), Nonhyeon 2-dong (13th), Seocho 4-dong, Seocho-gu (11th) and Jamwon-dong (18th) were in the upper ranks.

Among regions in Seoul other than Gangnam, Seogyo-dong, Mapo-gu (3rd), Itaewon 1-dong, Yongsan-gu (5th), Sinchon-dong, Seodaemun-gu (7th), Sangdo 1-dong, Dongjak-gu (9th), and Daebang-dong (12th) and Hwagok 1-dong, Gangseo-gu (14th) were in the list.

Meanwhile, dongs located in Gwanak-gu, Seoul are in the upper ranks (A dong is an administrative unit of a city in Korea). It was hard to go to several dongs in Gwanak-gu by taxi during nighttime including Sillim-dong (4th), Haengun-dong (6th), Cheongnyong-dong (16th), Inheon-dong (21st), and Daehak-dong (22nd).

Among regions outside Seoul, Opo-eup, Gwangju-si, Gyeonggi (10th) ranked the highest place. Ingye-dong, Suwon-si, Gyeonggi (23rd) and Jukjeon 1-dong, Yongin-si (27th), Pungdeokcheon 1-dong, Yongin-si (41st) and Dongcheon-dong, Yongin-si (42nd) were in the list.

This problem was relatively not bad in the rural areas. Among regions with the least access to a taxi during nighttime were Bujeon 2-dong, Busanjin-gu, Busan (744th), Ansim 3-4-dong, Dong-gu, Daegu (797th), Bupyeong 5-dong, Bupyeong-gu, Incheon (142nd), Chipyeong-dong, Seo-gu, Gwangju (90th), Oncheon 1-dong, Yuseong-gu, Daejeon (610th) and Samsan-dong, Nam-gu, Ulsan (400th).

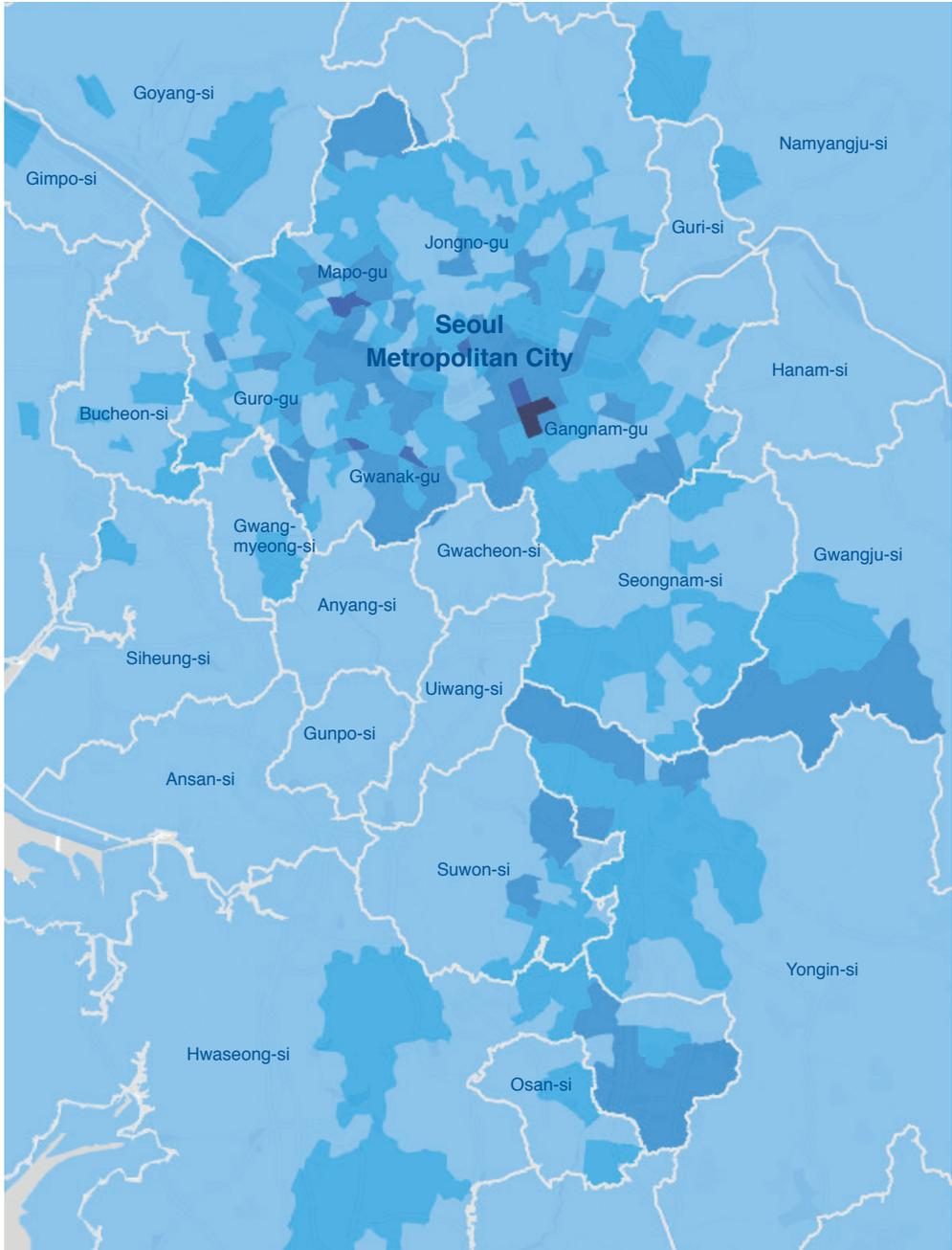
Regions with excessive demand during nighttime based on destination points

No	Destination	Location
1	Yeoksam 1-dong	Gangnam, Seoul
2	Nonhyeon 1-dong	Gangnam, Seoul
3	Seogyo-dong	Mapo, Seoul
4	Sillim-dong	Gwanak, Seoul
5	Itaewon 1-dong	Yongsan, Seoul
6	Haengun-dong	Gwanak, Seoul
7	Sinchon-dong	Seodaemun, Seoul
8	Cheongdam-dong	Gangnam, Seoul
9	Sangdo 1-dong	Dongjak, Seoul
10	Opo-eup	Gwangju, Gyeonggi
11	Seocho 4-dong	Seocho, Seoul
12	Daebang-dong	Dongjak, Seoul
13	Nonhyeon 2-dong	Gangnam, Seoul
14	Hwagok 1-dong	Gangseo, Seoul
15	Hannam-dong	Yongsan, Seoul
16	Cheongnyong-dong	Gwanak, Seoul
17	Yeongdeungpo-dong	Yeongdeungpo, Seoul
18	Jamwon-dong	Seocho, Seoul
19	Samseong 2-dong	Gangnam, Seoul
20	Hangangno-dong	Yongsan, Seoul
21	Inheon-dong	Gwanak, Seoul
22	Daehak-dong	Gwanak, Seoul
23	Ingye-dong	Suwon, Gyeonggi
24	Dangsan 2-dong	Yeongdeungpo, Seoul
25	Yeoui-dong	Yeongdeungpo, Seoul

No	Destination	Location
26	Yeoksam 2-dong	Gangnam, Seoul
27	Jukjeon 1-dong	Yongin, Gyeonggi
28	Apgujeong-dong	Gangnam, Seoul
29	Guro 3-dong	Guro, Seoul
30	Hwayang-dong	Gwangjin, Seoul
31	Seocho 3-dong	Seocho, Seoul
32	Yeonhui-dong	Seodaemun, Seoul
33	Seongsan 2-dong	Mapo, Seoul
34	Doksan 1-dong	Geumcheon, Seoul
35	Munjeong 2-dong	Songpa, Seoul
36	Namhyeon-dong	Gwanak, Seoul
37	Seowon-dong	Gwanak, Seoul
38	Yangjae 1-dong	Seocho, Seoul
39	Jamsilbon-dong	Songpa, Seoul
40	Gasam-dong	Geumcheon, Seoul
41	Pungdeokcheon 1-dong	Yongin, Gyeonggi
42	Dongcheon-dong	Yongin, Gyeonggi
43	Yongsin-dong	Dongdaemun, Seoul
44	Jayang 4-dong	Gwangjin, Seoul
45	Gongdeok-dong	Mapo, Seoul
46	Jingwan-dong	Eunpyeong, Seoul
47	Ahyeon-dong	Mapo, Seoul
48	Dongseon-dong	Seongbuk, Seoul
49	Segok-dong	Gangnam, Seoul
50	Guro 5-dong	Guro, Seoul

Based on weekdays from Jul. 2018 to Jun. 2019

Regions with excessive demand during nighttime based on destination points



Based on weekdays from Jul. 2018 to Jun. 2019

Which route is the worst?

Lastly, which route including both departure and destination points had an excessive demand during nighttime was observed

There are three types of routes that are hard to travel by taxi during nighttime. First of all, taxi drivers avoid too short distance. Typically, this is between the same or neighboring administrative dong. The routes travelling short distance in Gangnam, Seoul, from Yeoksam 1-dong to Nonhyeon 1-dong (1st) and within Yeoksam 1-dong (2nd) were in the upper ranks. Travelling from Seohyeon 1-dong, Seongnam-si, Gyeonggi to neighboring Opo-eup (3rd) was the same case.

In the meantime, drivers avoid the following cases: when it is hard to pick up a passenger on the way back even if the distance is not short or when the income to time ratio is low due to traffic. Travelling from Yeoksam 1-dong, Gangnam-gu to Sillim-dong (19th) and Haengun-dong (23rd), Gwanak-gu was included in those cases.

Travelling from Jongno 1·2·3·4 ga-dong to Itaewon 1-dong and from Itaewon 1-dong to Seogyo-dong was in the upper ranks. It is estimated that although drivers know that there will be many passengers in Itaewon and Hongdae late at night, many of them avoid entering into these regions because it is so busy.

Regions with excessive demand during nighttime based on travelling from departure to destination points

No	Departure	Location	Destination	Location
1	Yeoksam 1-dong	Gangnam, Seoul	Nonhyeon 1-dong	Gangnam, Seoul
2	Yeoksam 1-dong	Gangnam, Seoul	Yeoksam 1-dong	Gangnam, Seoul
3	Seohyeon 1-dong	Seongnam, Gyeonggi	Opo-eup	Gwangju, Gyeonggi
4	Nonhyeon 1-dong	Gangnam, Seoul	Yeoksam 1-dong	Gangnam, Seoul
5	Hyangnam-eup	Hwaseong, Gyeonggi	Hyangnam-eup	Hwaseong, Gyeonggi
6	Seogyo-dong	Mapo, Seoul	Sinchon-dong	Seodaemun, Seoul
7	Unseo-dong	Junggu, Incheon	Unseo-dong	Junggu, Incheon
8	Jongno 1·2·3·4 ga-dong	Jongno, Seoul	Itaewon 1-dong	Yongsan, Seoul
9	Nonhyeon 2-dong	Gangnam, Seoul	Yeoksam 1-dong	Gangnam, Seoul
10	Bongdam-eup	Hwaseong, Gyeonggi	Bongdam-eup	Hwaseong, Gyeonggi
11	Yeoksam 1-dong	Gangnam, Seoul	Jamwon-dong	Secho, Seoul
12	Cheongdam-dong	Gangnam, Seoul	Yeoksam 1-dong	Gangnam, Seoul
13	Yeoksam 1-dong	Gangnam, Seoul	Nonhyeon 2-dong	Gangnam, Seoul
14	Apgujeong-dong	Gangnam, Seoul	Yeoksam 1-dong	Gangnam, Seoul
15	Seocho 4-dong	Gangnam, Seoul	Nonhyeon 1-dong	Gangnam, Seoul
16	Sinchon-dong	Seodaemun, Seoul	Seogyo-dong	Mapo, Seoul
17	Yeoksam 1-dong	Gangnam, Seoul	Cheongdam-dong	Gangnam, Seoul
18	Dongtan 1-dong	Hwaseong, Gyeonggi	Dongtan 6-dong	Hwaseong, Gyeonggi
19	Yeoksam 1-dong	Gangnam, Seoul	Sillim-dong	Gwanak, Seoul
20	Yeoksam 1-dong	Gangnam, Seoul	Samseong 2-dong	Gangnam, Seoul
21	Nonhyeon 1-dong	Gangnam, Seoul	Nonhyeon 1-dong	Gangnam, Seoul
22	Seogyo-dong	Mapo, Seoul	Seogyo-dong	Mapo, Seoul
23	Yeoksam 1-dong	Gangnam, Seoul	Haengun-dong	Gwanak, Seoul
24	Seogyo-dong	Mapo, Seoul	Seongsan 2-dong	Mapo, Seoul
25	Itaewon 1-dong	Yongsan, Seoul	Seogyo-dong	Mapo, Seoul

Based on weekdays from Jul. 2018 to Jun. 2019

What should we do to send them home?

What to do to send those who fail to catch a taxi home can be found based on analysis of demand data of taxi hailer's departure and destination points.

One of the examples is the Seoul Night Bus, also known as the "Owl Bus", being operated since 2013. It operates from 12:00 AM to 3 - 4:00 AM every 30 minute. All nine routes cover a 70 km long distance on average.

The routes of the Night Owl buses were designed based on estimated travel demands mainly on big data analysis from domestic telecoms carriers. If Kakao T Taxi data is combined here, effective routes through which more people can go home by taxi late at night could be found.

Meanwhile, many taxi hailers that failed to grab a taxi wanted to go to neighboring regions. Accordingly, additional round trip or loop buses for short routes at Gangnam Station where a demand is high would be a great help for citizens.

Although diverse forms of night buses are introduced, however, all excessive demands could not be satisfied. There are still high demands that cannot be covered by new routes. Call buses using mini vans or sharing a cab service can be considered for the remaining demands. As obstacles to taxi sharing service like safety issues or a quarrel over taxi fares have been removed gradually with technology development, we carefully predict that chaos will not be repeated even if taxi sharing service is back.

**This is Seoul taxi
with its own business areas**



Despite a long line of taxis, there is no taxi that goes to my home

Suppose that someone tries to hail a taxi late at night at Seongnam-si, Gyeonggi where the head office of KakaMobility is located. There is a long line of taxis waiting for a passenger in front of the building. He knocks on the door of the first taxi in line and tells the driver where he needs to go. However, they all say their taxi can only pick up a passenger who goes to Seoul because they are Seoul taxis. Is this a trick to pick up a long-distance passenger? What does Seoul taxi mean?

In fact, in a taxi business area system, taxi drivers are not allowed to pick up any passenger regardless of where he goes. For example, Seoul taxi can pick up a passenger who wants to go Seongnam, Gyeonggi. However, this taxi is not allowed to operate in Seongnam after previous passenger gets off. Exceptionally, this taxi can pick up a passenger who wants to come back to Seoul which is its business area. If he fails to pick up a passenger who wants to come back to Seoul, he should go back to Seoul with empty seats.

Typically, taxi business areas are based on a special city, a metropolitan city, and si/gun units. This system was designed to guarantee a taxi operator's certain income within their business areas. The problem is that since road and subway infrastructure and people's living environment have been expanded, people feel that original business areas are too small. Now, there are so many people that commute from Seoul to neighboring cities every day.

This part looks into what kind of inconvenience customers and taxi drivers go through due to the current business area system based on Kakao T Taxi data. The case of catching a taxi late at night at Bundang-gu, Seongnam-si, Gyeonggi where Kakao Mobility's head office is located is observed.

People riding a taxi in Bundang late at night

Bundang-gu, Seongnam-si, Gyeonggi is a new town developed since 1990s. There are tech companies like Kakao, NCSOFT, Ahn Lab, HANCOM, Nexen, and SK Planet mainly at Pangyo which has been recently established. There are a number of restaurants and pubs mainly at Yatap Station, Jeongja Station, Seohyeon Station and Pangyo Station.

Like most regions in the capital areas, it is not easy to catch a taxi late at night in Bundang. It is relatively easier especially for those living in Seoul to catch a taxi to go home. However, for Seongnam citizens and those living in neighboring cities like Yongin and Gwangju, it is so hard. Why does this happen?

The following table is based on Kakao T Taxi data in Bundang ordinary Friday evening on August 2, 2019. Let's look into the data at 11 PM which is relatively early in the evening. Demand of those who want to travel within Seongnam-si was 41% of the total taxi calls. Calls from those who wanted to go to Seoul was only 18%. However, among available taxis, 53% was Seongnam taxis and 38% was Seoul taxis. This means taxis that pick up passengers in Seoul and drop them off in Seongnam amounted to 38% of all available taxis.

18% passengers can ride both 38% Seoul taxis and 53% Seongnam taxis. This means they can go to Seoul by taxi relatively easily.

On the other hand, 42% passengers whose destinations are in Seongnam should com-

pete with passengers whose destinations are in Seongnam, Seoul, Yongin, Gwangju and more to catch 53% Seongnam taxis. It is also not easy for those who want to go to Yongin or Gwnagju other than Seongnam to catch a taxi.

For the taxi driver's part, 38% Seoul taxi drivers should fiercely compete with not only Seoul taxi drivers but also Seongnam taxi drivers to pick up 18% Seoul passengers. If they fail to meet Seoul passengers, they have no choice but to come back empty.

At the same time at the same place, while Seongnam passengers are waiting for a taxi stamping their feet, Seoul taxi drivers are worried about going back to Seoul without a passenger. This is an ironic situation.

Taxi demand and supply in Bundang during nighttime (11:00 PM)

No	Taxi hailer's destination (demand)		No	Taxi's business area (supply)	
1	Seongnam, Gyeonggi	41%	1	Seongnam, Gyeonggi	53%
2	Yongin, Gyeonggi	22%	2	Seoul	38%
3	Seoul	18%	3	Yongin, Gyeonggi	4%
4	Gwangju, Gyeonggi	7%	4	Anyang, Gyeonggi	2%
5	Suwon, Gyeonggi	3%	5	Suwon, Gyeonggi	1%

In Bundang-gu, Seongnam-si, Gyeonggi, demand is based on 23:00~23:20 and supply is based on 23:00.

This time, let's look into the data at midnight which is one hour later. 49% of total taxi hailers wanted to travel within Seongnam. The figure increased than one hour ago. On the other hand, only 8% wanted to go to Seoul. It dropped. From the supply side, Seoul taxis reached 51% and Seongnam taxis are only 41%.

From this time zone, more taxis came to Bundang from Seoul to drop off passengers. That's why Seoul taxi ratio went up compared to one hour ago. 8% Seoul passengers can catch both 51% Seoul taxis and 41% Seongnam taxis. It is easier for them to catch a taxi.

In the meantime, Seongnam passengers waited for a taxi stamping their feet. To catch 41% Seongnam taxis, they should compete even with those who want to go to Yongin, Gwangju, Suwon and more. It is natural that they could not catch a taxi easily.

51% Seoul taxis fiercely compete to pick up only 8% Seoul passengers. Since they have no choice but to come back to Seoul with empty seats, some drivers wait long. While the drivers were on the way back empty, those who wanted to go to Seongnam, Yongin, Suwon and Anyang were shouting to hail a taxi on the other side of the road. This is unavoidable. If the drivers pick up one of them, they will face 400,000 won of penalty.

Taxi demand and supply in Bundang during nighttime (12:00 AM)

No	Taxi hailer's destination (demand)		No	Taxi's business area (supply)	
1	Yongin, Gyeonggi	46%	1	Seoul	54%
2	Seongnam, Gyeonggi	32%	2	Seongnam, Gyeonggi	38%
3	Gwangju, Gyeonggi	9%	3	Yongin, Gyeonggi	2%
4	Seoul	7%	4	Suwon, Gyeonggi	1%
5	Suwon, Gyeonggi	3%	5	Anyang, Gyeonggi	1%

In Bundang-gu, Seongnam-si, Gyeonggi, demand is based on 00:00~00:20 and supply is based on 00:00.

It reached 1:00 AM. A new problem was created. Yongin passengers accounted for 46% of the total taxi hailers, which is the highest figure. There were still 32% Seongnam passengers and only 7% Seoul passengers. However, more Seoul taxis came in, amounting to 54% of the total supply.

46% Yongin passengers could ride 2% Yongin Taxis and 38% Seongnam taxis. However, Seongnam taxi drivers prefer Seoul or Seongnam passengers because they have a higher chance to pick up Seongnam passengers on the way back. No matter how loud Yongin passengers shout, they fail. Meanwhile, Seoul passengers ride a taxi and leave at ease.

54% Seoul taxi drivers waited for only 7% Seoul passengers, but most of them failed. They have no choice but to travel a long distance back to Seoul with empty seats.

Taxi demand and supply in Bundang during nighttime (1:00 AM)

No	Taxi hailer's destination (demand)		No	Taxi's business area (supply)	
1	Yongin, Gyeonggi	46%	1	Seoul	54%
2	Seongnam, Gyeonggi	32%	2	Seongnam, Gyeonggi	38%
3	Gwangju, Gyeonggi	9%	3	Yongin, Gyeonggi	2%
4	Seoul	7%	4	Suwon, Gyeonggi	1%
5	Suwon, Gyeonggi	3%	5	Anyang, Gyeonggi	1%

In Bundang-gu, Seongnam-si, Gyeonggi, demand is based on 1:00~1:20 and supply is based on 1:00.

A long way to go

The taxi business area system itself is necessary. If it is abolished, all taxis would drive into big cities and it would be harder to catch a taxi in small and mid-sized cities.

With developed transportation and expanded living environment, however, many citizens travel far beyond the si/gun boundary. This should be considered. Expanding the current business areas should be reviewed, if not abolishing the system.

Some local governments have combined the current business areas to deal with the changing travel demand of citizens. Some capital areas like Anyang, Gwacheon, Gunpo, Uiwang, Hanam and Namyangju are included. Nonetheless, from the nationwide perspectives, only a small group of regions join such a move.

In relation with the necessity of the taxi business area system improvement, the Cheonan Asan KTX Station case is a good example. While the newly established station for KTX trains is geographically located close to the downtown area of Cheonan, the station building belongs to Asan-si. As taxi business areas are different between Cheonan and Asan, taxi drivers as well as passengers go through inconvenience. It is time to reconsider the invisible boundary.

Kakao T Driver's DUI free project



Please never drive drunk

Driving under the influence is definitely the crime that can put yourself and others in danger. It has been reported frequently that celebrities or sports stars involved in drunk driving accidents led to their ultimate downfall overnight. According to the Road Traffic Authority, the number of drunk driving accidents reached over 20,000 with 439 deaths only in 2017 and the cost of drunk driving accidents with casualties amounted to 763.1 billion won³⁾.

Fortunately, active guidance led by the authorities and mature citizenship have contributed to reducing drunk driving cases. When people drink on the day that they drive a car, most of them call a designated driver even if it is a little. For the last one year, Kakao T Driver service usage has sharply increased 31% year-on-year based on completed services.

**Operation
growth rate of
Kakao T Driver**

31%

—
Based on services competed from Jul.
2018 to Jun. 2019

Kakao T Driver is analyzing call patterns and taking an action to provide faster and more convenient services so that one last passenger can go home safely. This part introduces several interesting cases.

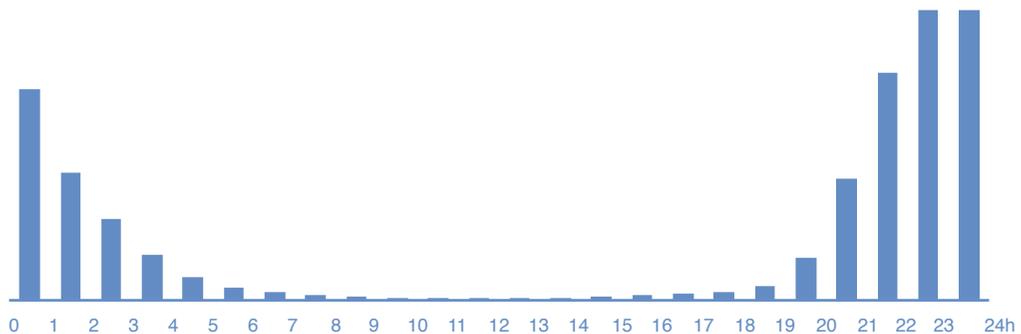
3) "2017 Estimation and Evaluation of Road Traffic Accidents" by the Road Traffic Authority in 2018

A designated driver is necessary in the morning if someone has a drink until late at night

In many cases, people use a designated driver to go home after having a drink at night. In fact, 66% use designated driver service for four hours from 9:00 PM to 1:00 AM. The demand reaches 83% for six hours from 8:00 PM to 2:00 AM.

However, if someone drinks until late at night or early morning, a hangover can last until morning. It is natural that a hangover can affect driving performance. Nonetheless, many people decided to drive by themselves in the morning instead of using designated driver service.

Time-based call distribution on Kakao T Driver



Based on calls from Jul. 2018 to Jun. 2019

Meanwhile, the revised Road Traffic Law with a tougher DUI enforcement and punishment was effective on the 25th of June, 2019. The threshold for the state of intoxication for a driver's license suspension was sharply lowered from 0.05% to 0.03% blood alcohol concentration and from 0.1% to 0.08% for revocation. Now, even when someone feels tipsy, his driver's license may be suspended or revoked. In case of deaths caused by intoxicated driving, offenders may face at least three years of imprisonment or life imprisonment, whereas it was imprisonment for not less than one year.

As the new bill was implemented, those who drink until late at night or early morning, take a nap and then is behind the wheel are highly likely to fail a Breathalyzer test. The authorities have launched active campaigns against drunk driving. Then, people started to move.

A change in the number of calls to use designated driver service in the morning before and after the new bill was implemented was analyzed based on Kakao T Driver. The figure from 7-9:00 AM when commuters drove to work increased 77% after the amendment.

Kakao T Driver call growth rate during the morning commuting time after amendment of the Road Traffic Law

77 %

—
Based on calls from 7-9:00 AM and compared with those for four weeks before and after Jun. 25, 2019

Those who try to manage their relationship before long holidays

When a new year comes, many people check how many holidays they have. Especially after the substitute holiday system was introduced, several long holidays, called the “Golden holidays”, make many workers excited.

The demand for Kakao T Driver sharply increases on weekday evenings right before the holidays like Chuseok, Seollal and holidays interspersed with workdays. Compared to ordinary demand, a 16-46% increase was observed. There were many people who spent time with their friends that they wanted to see because they were busy and had not seen each other for a long while.

Golden holidays and Kakao T Driver call growth rate in the past year

Date	Consecutive holidays	No. of consecutive holidays (Max.)	Call growth rate
Sep.20, 2018 (Thu)	Chuseok	6 days	46%
Oct. 2, 2018 (Tue)	National Foundation Day (Oct. 3), Hangul Day (Oct. 9)	7 days	16%
Jan. 31, 2019 (Thu)	Lunar New Year	6 days	32%
Apr. 30, 2019 (Tue)	Workers' Day (May 1), Children's Day(May 6, substitute holiday)	6 days	34%

Based on calls from Jul. 2018 to Jun. 2019 and compared with those on the same day of the week for four weeks right before relevant holidays. Friday included in consecutive holidays because many workers went on annual leave.

Drinking parties at the end of the year

In addition to the night before long holidays began, there was another period when people wanted to meet each other. This was the end of the year when the year was coming to an end. All of you can expect an increase in demand for a designated driver in December, but the actual data showed it was phenomenal.

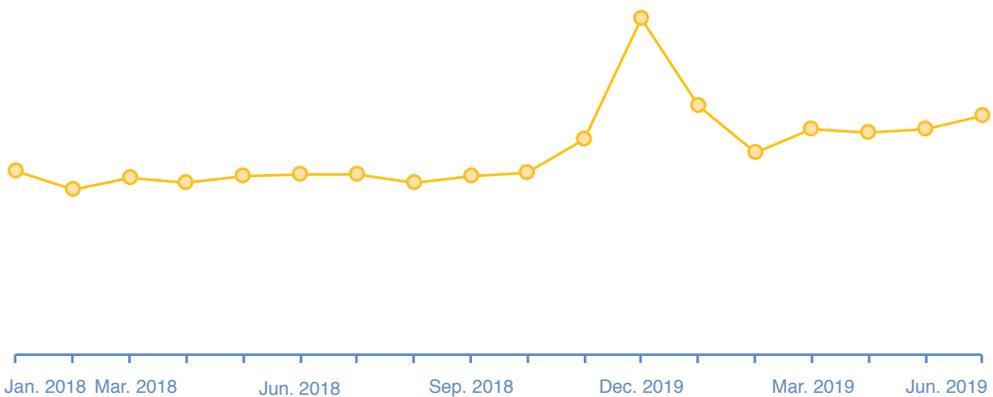
As of 2018, Kakao T Driver calls increased 87% compared to those from Jan. to Nov. That's why in December, Kakao Mobility also does its best to connect a number of users and designated drivers smoothly.

**Kakao T Driver call
growth rate in December
compared to other months**

87 %

—
Compared with average calls from Jan.
to Nov. 2018

**Monthly trends of
Kakao T Driver calls**



Based on calls from Jan. 2018 to Jun. 2019

Samgyeopsal with Soju, Pajeon with Mageoli and Rainy day with Kakao T Driver

The sound of sizzling Smagyeopsal or Pajeon is reminiscent of falling rain. It is commonly said that people feel like drinking when it rains. Is this true? It made sense on analysis of Kakao T Driver data.

For the last one year, a daily rainfall of at least 15mm occurred 16 days in total in Seoul. If designated driving data on a rainy day is compared with that on a not rainy day, this shows how many people drink on a rainy day. In fact, Kakao T Driver data showed that the number of calls increased 10% or higher on a rainy day.

**Kakao T Driver call
growth rate on a rainy day**

10.4 %

—
Based on calls in Seoul from Jul. 2018
to Jun. 2019

Where does it have the highest demand for a designated driver nationwide?

Where it has the highest demand for a designated driver in si/gun/gu units nationwide was looked into based Kakao T Driver data. As expected, Gangnam-gu Seoul had the most calls for designated drivers nationwide. It took first with dominant figure, followed by Bundang-gu Seongnam-si, Seocho-gu Seoul, Hwaseong-si Gyeonggi, and Mapo-gu Seoul.

Other than the capital areas, Yuseong-gu Daejeon, Seogu Daejeon, Seobuk-gu Cheonan-si Chungnam and Seogu Gwangju were in the upper ranks. Among metropolitan areas, Busan-jin-gu in Busan, Suseong-gu in Daegu, Namdong-gu in Incheon and Namgu in Ulsan were in the upper ranks.

Regions with high call rates on Kakao T Driver

No	Departure	No	Departure
1	Gangnam-gu, Seoul	11	Seo-gu, Daejeon
2	Bundang-gu, Seongnam-si, Gyeonggi	12	Seobuk-gu, Cheonan-si, Chungnam
3	Seocho-gu, Seoul	13	Seo-gu, Gwangju
4	Hwaseong-si, Gyeonggi	14	Bucheon-si, Gyeonggi
5	Mapo-gu, Seoul	15	Gangseo-gu, Seoul
6	Songpa-gu, Seoul	16	Paldal-gu, Suwon-si, Gyeonggi
7	Yeongtong-gu, Suwon-si, Gyeonggi	17	Siheung-si, Gyeonggi
8	Yeongdeungpo-gu, Seoul	18	Dongan-gu, Anyang-si, Gyeonggi
9	Yuseong-gu, Daejeon	19	Junggu, Seoul
10	Yongsan-gu, Seoul	20	Giheung-gu, Yongin-si, Gyeonggi

Based on departure points of calls from Jul. 2018 to Jun. 2019 including autonomous gu and non-autonomous gu

Data-based shelter suggestion for designated drivers

A designated driver is a demanding job that requires long time travelling and waiting outside late at night. On a day with a number of calls, they hang around on the streets only looking at their smartphone. It is hard for them to find a place to sit after they finish their work and before the first trains start the morning.

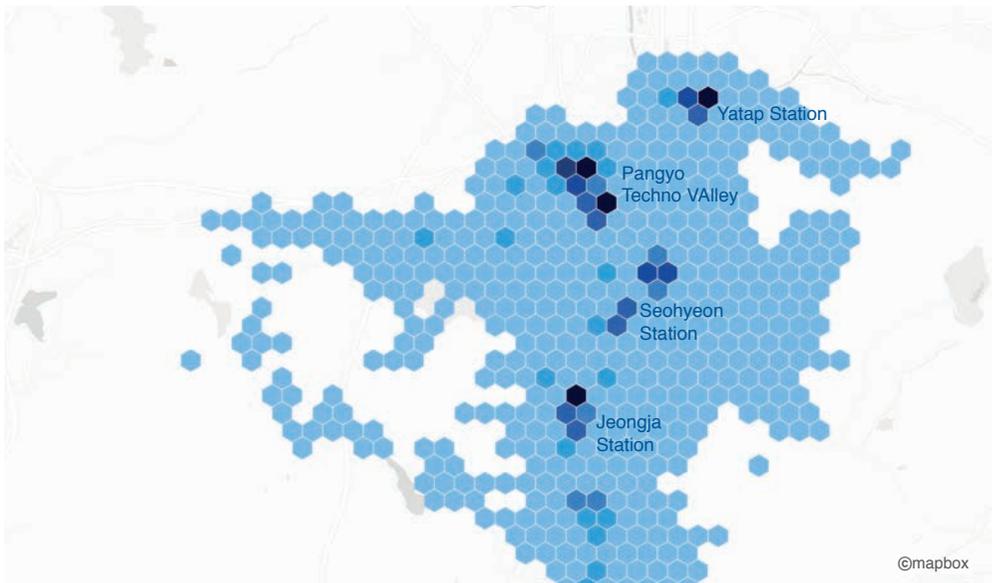
The Seoul government has run the Seoul Shelters for Travelling Workers including designated drivers since 2016. There are three shelters at Sinnonhyeon Station (Gangnam-gu and Secho-gu), Hapjeong Station (Mapo-gu) and Euljiro 1-ga Station (Junggu). Other local governments are planning or considering similar shelters.

Kakao T Driver calls and operation data show where a shelter is required in the region and how big it should be. Kakao Mobility wants to help designated drivers, so it is actively cooperating local governments' request to provide data for the installation of this kind of shelters.

Among the above mentioned regions in the upper ranks with a number of calls, where calls were concentrated actually was checked on a map as follows. The regions where there is already a shelter was excluded.

In Bundang-gu, Seongnam-si, Gyeonggi that took second in the calls for Kakao T Driver. There were four clusters: Pangyo Techno Valley, Yatap Station Bundang Line, Jeongja Station and Seohyeon Station. Especially in the region from Pangyo Station to Pangyo Techno Valley, there was a high demand for a designated driver. If a shelter is installed around this region, this would be useful for a number of travelling workers.

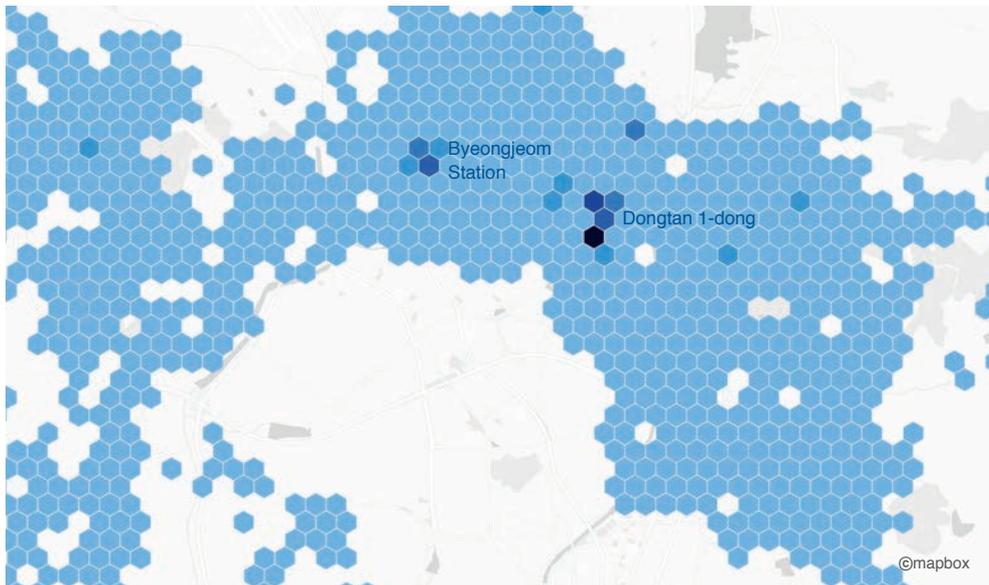
Kakao T Driver call distribution in Bundang-gu, Seongnam-si, Gyeonggi



Based on calls from Jul. 2018 to Jun. 2019. Darker color means more calls.

In Hwaseong-si, Gyeonggi that took fourth, Dongtan 1-dong located in the far east recorded the most calls. Jinan-dong located on the east side of Byeongjeom Station also received quite a number of calls, although it was not as much as in Dongtan.

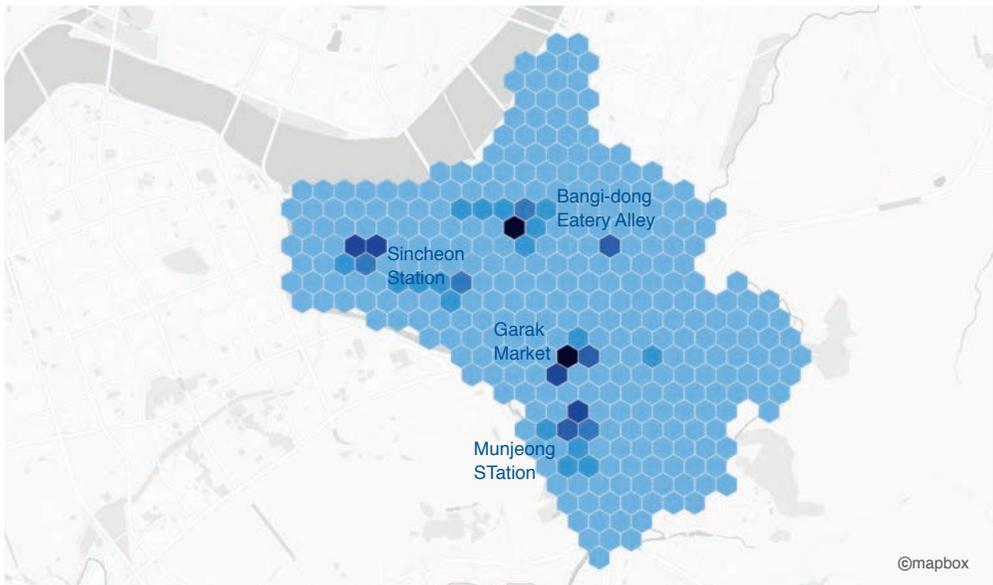
Kakao T Driver call distribution in Hwaseong-si, Gyeonggi.



Based on calls from Jul. 2018 to Jun. 2019. Darker color means more calls.

Next is Songpa-gu, Seoul that took sixth. The calls were concentrated around Bangi-dong Eatery Alley on the east side of Jamsil Station, a commercial district across the Garak Market, Sincheon Station Line 2 with a traditional entertainment district and the Court on the west side of Munjeong Station Line 8. All of them are famous districts with bars.

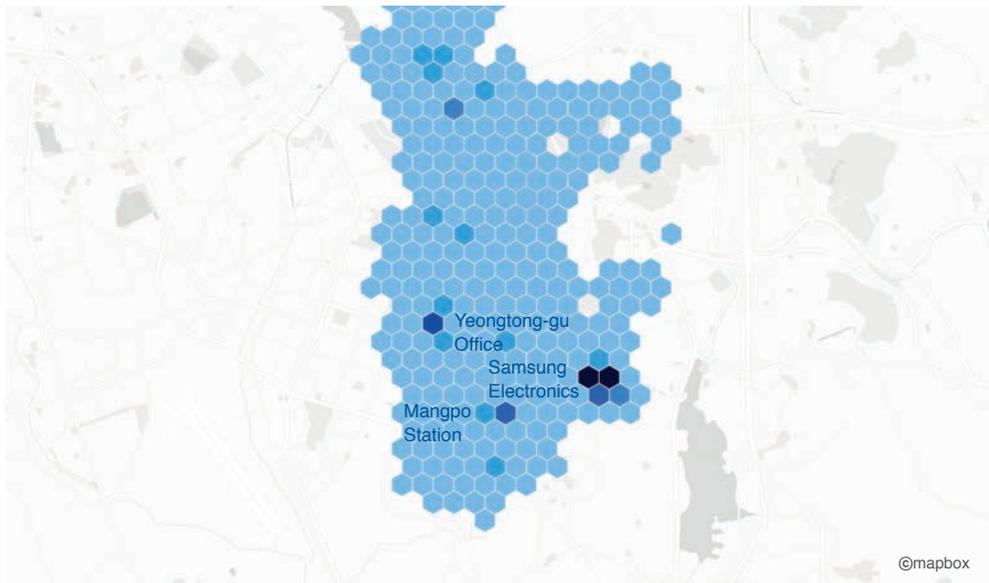
Kakao T Driver call distribution in Songpa-gu, Seoul



Based on calls from Jul. 2018 to Jun. 2019. Darker color means more calls.

Yeongtong-gu, Suwon-si, Gyeonggi that took seventh was looked into. Along the east side of Samsung Electronics Main office, there was a large concentrated area with calls for a designated driver. Areas around Yeongtong-gu Office on its west side and Mangpo Station on its south side also had quite a high demand for a designated driver, although this was a smaller number than on its east side.

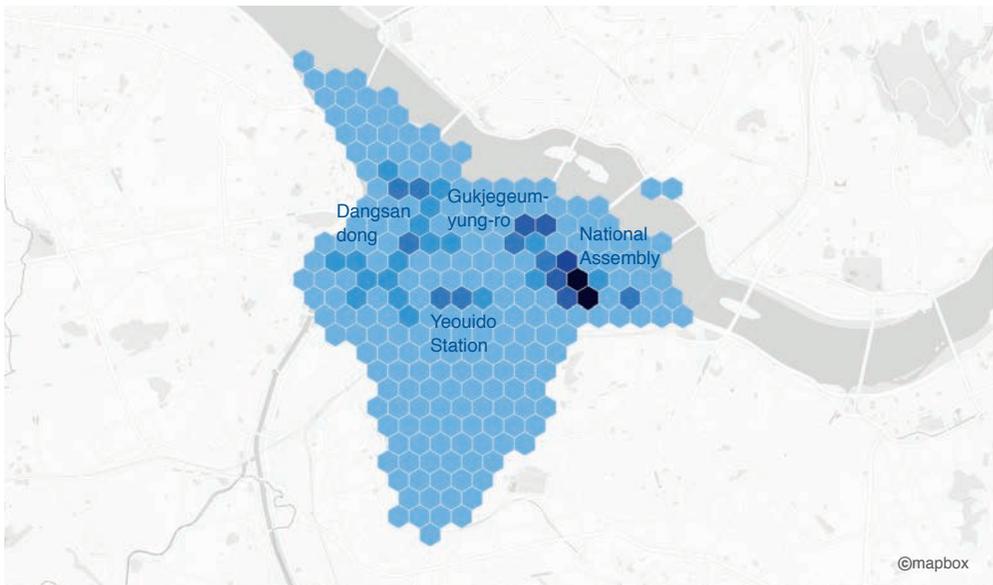
Kakao T Driver call distribution in Yeongtong-gu, Suwon-si, Gyeonggi



Based on calls from Jul. 2018 to Jun. 2019. Darker color means more calls.

Last, but not least, it was Yeongdeungpo-gu, Seoul in the 8th. There was a large concentrated area with a number of calls for a designated driver around the areas between Gukjegeum-yung-ro and Yeouido Station in Yeouido. A high demand was also observed in front of the National Assembly and in Dangsang-dong. If a shelter is established in those areas, designated workers would work a bit more easily.

Kakao T Driver call distribution in Bundang-gu, Seongnam-si, Gyeonggi



Based on calls from Jul. 2018 to Jun. 2019. Darker color means more calls.

Innovating Kakao T Driver with AI

Now, the combination of technology and tradition is a global phenomenon. FinTech emerged as a major trend in the financial industry, mobile commerce in the distribution industry and digital healthcare in the medical industry. Such a change is rapidly spreading into offline based daily services.

Previous designated driving service that was provided via leaflets and phone calls has become technology based service with higher convenience for customers. As more people are ordering food on a smartphone app, they are getting used to a new app-based designated driving service. Those who use an app-based designated driving service do not have to provide their current location over the phone, and can pay automatically depending on the travelled distance measured on an app so that they can avoid a dispute over a taxi fare.

As more and more people have used Kakao T Driver, more data has been gathered and this has helped to enhance designated driving services. AI-based matching algorithm is used to increase efficiency for both a designated driver and a user. In addition, a designated driver's last call is matched for his convenience so that he can finish his work and get home more easily. This virtuous cycle based on data will lay a foundation for providing more convenient mobile service.

Kakao Navi hot places



Kakao Navi shows travel trends

People turn on a navigation app all the time when they drive to a new place. They enter hot restaurants or travel destinations into a search bar. This travelling data shows popular trends these days. It also shows what kind of cafes or which outlets are popular.

In this part, where people have headed with the Kakao Navi app on for the last one year was looked into by category: restaurants, travel destinations, cultural places, shopping centers and golf courses because these places shows people's life the most. However, it is not guaranteed if restaurants in the list are actually famous. It would appreciate if people understand that visitors often go to these restaurants using navigation service.

Restaurants A loaf of bread is better than the songs of many birds: Daedongyeojido with popular restaurants

There is a Korean saying “Like Hong Gil-dong robbed Haeinsa.” This is used as a metaphor for someone who stole all stuff or finished all the food without leaving anything. In fact, it is a crime

to steal stuff, but it is a different story for food. If there is a restaurant that is good enough to make them to finish all the food, they should know. That’s why the most popular restaurants among Kakao Navi users for the last one year were looked into.

The most popular restaurant nationwide was Lee Sung Dang in Gunsan, followed by Joyang Bangjik in Incheon in second place and Waveon Coffee in Busan in third. Mouth-watering restaurants like Bonpo Meoguri Jip, Sung Sim Dang Bakery and Donghwa Garden were in the upper ranks.

Some cafes specialized in coffee put up a good fight. Joyang Bangjik that is a former textile factory during the Japanese occupation, Busan Waveon Coffee that is loved by hipsters in Busan, Terarosa Coffee Factory in Gangneung which is home to coffee and Starbucks Riverside Paldang DTR where people can enjoy the view of the Han River were in the upper ranks.

Top 20 restaurants nationwide on Kakao Navi

No	Restaurants	Location
1	Lee Sung Dang	 Gunsan, Jeonbuk
2	Joyang Bangjik	 Ganghwa, Gyeonggi
3	Waveon Coffee	 Gijang, Busan
4	Bonpo Meoguri Jip	 Sokcho, Gangwon
5	Terarosa Coffee Factory	 Gangneung, Gangwon
6	Sung Sim Dang Bakery	 Junggu, Daejeon
7	Donghwa Garden	 Gangneung, Gangwon
8	Chungchosoo Mulhoe	 Sokcho, Gangwon
9	Soksiwonhan Daegutang	 Haeundae, Busan
10	ongchoo Gamagol	 Yangju, Gyeonggi
11	Umjinae Pojangmacha	 Gangneung, Gangwon
12	Starbucks Riverside Paldang DTR	 Namyangju, Gyeonggi
13	Terarosa Coffee Seojog	 Yangpyeong, Gyeonggi
14	Ganggangsullae Neukbomnongwon	 Goyang, Gyeonggi
15	Cafe Sann	 Danyang, Chungbuk
16	Ilsan Kalguksu	 Goyang, Gyeonggi
17	Bongbread	 Sokcho, Gangwon
18	Chuncheon Tongnamujip Dakgalbi	 Chuncheon, Gangwon
19	Ujin Haejanguk	 Jeju, Jeju
20	Masirang Cafe	 Junggu, Incheon

Based on Jul. 2018 to Jun. 2019

Once they were full, where did they head next? For lack of space, all popular restaurants could not be covered here. Where did those who visited the most popular restaurant Lee Sung Dang go next were looked into. Most people went to the Gyeongam-dong Railroad Village where visitors could look into people’s life style for the late modern period from the Japanese Occupation to the liberation of Korea, followed by Jilinseong that is famous for black bean noodles with pepper, Bogseonglu that is one of the top five Chinese-style noodle restaurants, Chowon Studio that gained popularity from the movie ‘Christmas in August.’ Some people visited Seonyudo located across the Saemangeum Seawall which is famous for the most beautiful driving course in Jeonbuk.



Lee Sung Dang

Source: Korea Tourism Organization (photo by Byeomsu Lee)

Fun fact #1: There is no doubt that Lee Sung Dang (1st) and Sung Sim Dang Bakery (6th) are among top three bakeries nationwide. However, people are divided on one last bakery: Poongnyun Bakery in Jeonju and Mammoth Bakery in Andong. Only some people say Napoleon Bakery in Seoul.

Fun fact #2: If you have a fear of heights, be careful at Cafe Sann (15th). It is at 600 meters above the sea level.

Next destination after Lee Sung Dang on Kakao Navi

Based on Jul. 2018 to Jun. 2019



Travel destinations

Korea is full of places to go

There is a saying “All work and no play makes Jack a dull boy.” People may get bored if they work all the time and do not get some time off from work. This is not our traditional proverb. It is late, but fortunately it is commonly used now. Where did people who decided not to be dull like Jack go out to play?

The most popular travel destination was Gangwon Land, closely followed by Everland. Coincidentally, two places end with “land,” but they are totally different.

Eurwangni Beach claimed bronze. As shown in the table below, among the top 20 travel destinations, beaches are dominant. This directly shows how much people in Korea which is surrounded by water on three sides love beaches.

Korean Folk Village took 9th place. This place is popular for cosplay of traditional Korean characters like a drunk, a madwoman and a bad official. Yeosu Street Food Market ranked 14th. Originally, this was not a popular place, but the song Yeosu Night Sea led many tourists to this place.

***That's unbelievable!** One of the restaurants in Yeosu put up a banner “All food is free on the day when Jang Beomjun that has fed Yeosu visits our restaurant!” On the 30th of March, 2019, he really showed up at this restaurant. There was a rumor that all guests enjoyed all the food for free on that day.

Top 20 travel destinations nationwide on Kakao Navi

No	Travel destination	Location
1	Gangwon Land	● Jeongseon, Gangwon
2	Everland	🏰 Yongin, Gyeonggi
3	Eurwangni Beach	🏖️ Junggu, Incheon
4	Daecheon Beach	🏖️ Boryeong, Chungnam
5	Gwangalli Beach	🏖️ Suyeong, Busan
6	Haeundae Beach	🏖️ Haeundae, Busan
7	Wolmido	🏰 Junggu, Incheon
8	Gyeongpodae	🏖️ Gangneung, Gangwon
9	Korean Folk Village	🏰 Yongin, Gyeonggi
10	Sokcho Beach	🏖️ Sokcho, Gangwon
11	Songjeong Beach	🏖️ Haeundae, Busan
12	Anmok Beach	🏖️ Gangneung, Gangwon
13	Heyri Art Valley	📍 Paju, Gyeonggi
14	Yeosu Street Food Market	📍 Yeosu, Jeonnam
15	Nami	🏖️ Gapyeong, Gyeonggi
16	Oido Red Lighthouse	📍 Siheung, Gyeonggi
17	Dongmak Beach	🏖️ Ganghwa, Incheon
18	Yeongildae Beach	🏖️ Pohang, Gyeongbuk
19	Majang Lake Suspension Bridge	🏖️ Paju, Gyeonggi
20	Lotte World	🏰 Songpa, Seoul

Based on Jul. 2018 to Jun. 2019

What was the next destination after visiting popular travel destinations? Most of those who visited Gangwon Land and Everland headed home or to hotels or terminals. However, those who headed to Eurwangni Beach in the third had a meal at Hwanghae Kalguksu and enjoyed coffee at Masirang Cafe. Then, some of them headed to Wolmido, Wangsan Beach or Yeongjongdo.

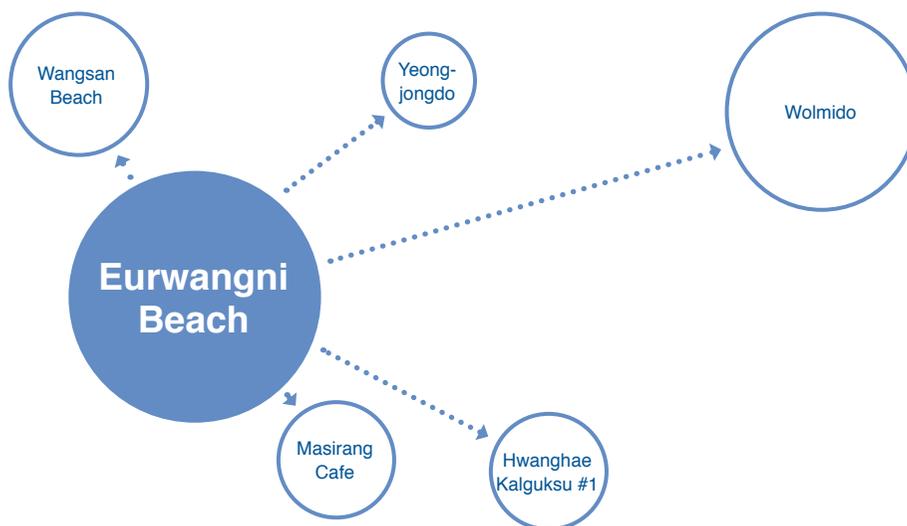


Eurwangni Beach

Source: Korea Tourism Organization

Next destinations after Eurwangni Beach on Kakao Navi

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Based on Jul. 2018 to Jun. 2019



Cultural Spaces

Arts improve the quality of life

Video artist Nam June Paik left a message “Our life is bland. Arts make life salty and interesting.” Whether agree or not, many people travel through many different places around the country to enjoy the arts.

The most loved cultural place was Seoul Arts Center which is home to cultural arts and an art complex of Korea surrounded by the Umyeon Mountain in Seocho, Seoul. Although people do not visit a performing hall, they can just sit outside in front of the arts center’s signature music fountain, which make them so relaxed.

Independence Hall of Korea in Cheonan took second. There were still many people who remembered a stain in our history under the harsh Japanese rule of Korea for 36 years. This is a very meaningful result considering the recent relationship between Korea and Japan.

KT&G Sangsangmadang in Hongdae took fifth. Despite its small space, people can enjoy different cultural events including movies, performances, and exhibitions at a lower price. Since this is located at the center of busy streets, it has non stop visitors day and night. Don’t be surprised when you encounter people on the streets who get dressed differently in the daytime and nighttime.

Top 20 cultural spaces nationwide on Kakao Navi

No	Cultural spaces	Location
1	Seoul Arts Center	★ Seocho, Seoul
2	Independence Hall of Korea	🏛️ Cheonan, Chungnam
3	Osulloc Tea Museum	🏛️ Seogwipo, Jeju
4	Aqua Planet Ilsan	★ Goyang, Gyeonggi
5	KT&G Sangsangmadang	★ Mapo, Seoul
6	Sejong Center	★ Jongno, Seoul
7	Aqua Planet Jeju	★ Seogwipo, Jeju
8	Aqua Planet Yeosu	★ Yeosu, Jeonnam
9	Gwacheon National Science Museum	🏛️ Gwacheon, Gyeonggi
10	War Memorial of Korea	🏛️ Yongsan, Seoul
11	Gyeonggi Children's Museum	🏛️ Yongin, Gyeonggi
12	Pocheon Art Valley	★ Pocheon, Gyeonggi
13	Dongdaemun Design Plaza	★ Junggu, Seoul
14	Yeouido KBS Hall	★ Yeongdeungpo, Seoul
15	D Museum	🏛️ Yongsan, Seoul
16	KEPCO Art Center	★ Seocho, Seoul
17	Chungmu Art Center	★ Junggu, Seoul
18	Bunker de Lumières	🏛️ Seogwipo, Jeju
19	Lotte World Aquarium	★ Songpa, Seoul
20	Blue Square Interpark Hall	★ Yongsan, Seoul

Based on Jul. 2018 to Jun. 2019

Many of those who visited the Independence Hall of Korea in second place headed to popular Sundae restaurants in Cheonan. Among those in Byeongcheon Sundae Street, most of them went to Parksunja Aunae Sundae or Chungnamjip Sundae. Many of them visited the Memorial Hall of Patriotic Martyr Yu Gwan-sun and the Beautiful Garden Hwasumok, the first government designated private garden.

Fun fact: Hanwha Aqua Planet signed an MOU with SmartStudy in December, 2017 that introduced the “Pinkfong Shark Family.” If your kids are a big fan of the Shark Family, please be careful at the souvenir shop.

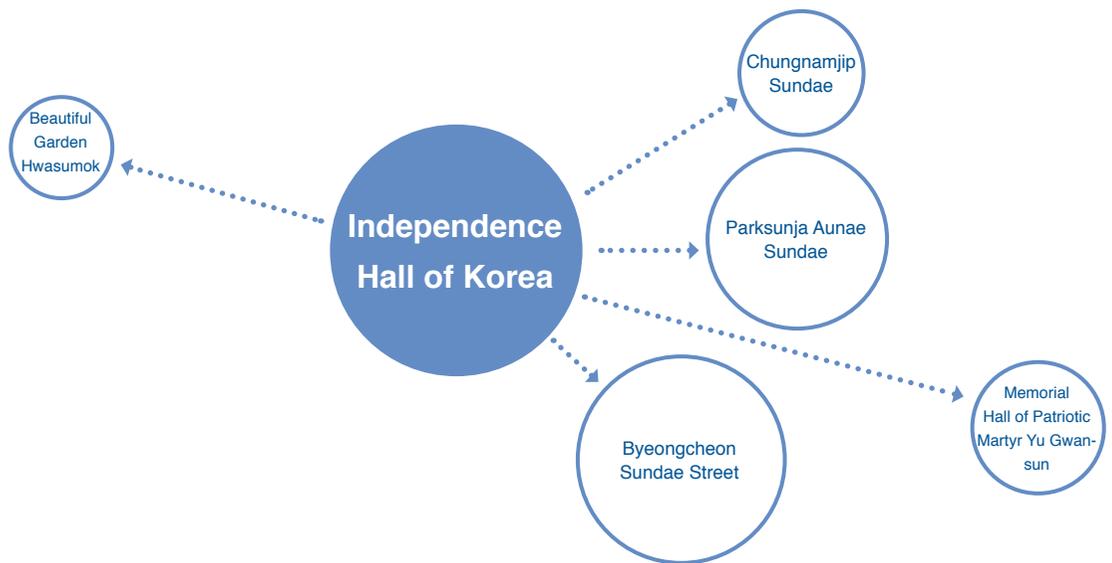


Independence Hall of Korea

Source: Korea Tourism Industry (photo by IR Studio)

Next destinations after Independence Hall of Korea on Kakao Navi

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Based on Jul. 2018 to Jun. 2019



Shopping centers

If you don't buy, it's 0 won

Once you buy, it's hard to stop

The best places that put people in a shopping mood for the last one year ranked. The most popular destination was Starfield Hanam, Korea's largest shopping mall with a floor space of 460,000 square meters and a retail space of 156,000 square meters, followed by Starfield Goyang in second. Please shop carefully in places like Starfield.

IKEA Gwangmyeong and IKEA Goyang took third and fifth places, respectively. For reference, following the arrows on the floor of IKEA is recommended in many aspects. It's easy to get lost if you try to take a shortcut.

Hyundai Department Store Pangyo in Seongnam-si was the fourth most popular destination. It has Korea's largest grocery store, Hyundai Museum of Kids' Book and Art and a grand performance hall that seemed to attract people to this place. High resident population and easy access to highways were a plus.

In 14th place was Costco Wholesale Yangjae that boasts the highest sales of any Costco worldwide. James Sinegal, CEO of Costco Wholesale, said in an interview with the Seattle Times, "I cannot recall it without tears." Probably, he was grateful for such a record. Of course, it was not confirmed if he actually cried or was easily moved to tears although he cried.

Top 20 shopping centers nationwide on Kakao Navi

No	Shopping Center	Location
1	Starfield Hanam	 Hanam, Gyeonggi
2	Starfield Goyang	 Goyang, Gyeonggi
3	IKEA Gwangmyeong	 Gwangmyeong, Gyeonggi
4	Hyundai Department Store Pangyo	 Seongnam, Gyeonggi
5	IKEA Goyang	 Goyang, Gyeonggi
6	Hyundai Premium Outlet Gimpo	 Gimpo, Gyeonggi
7	Sorae Fish Market	 Namdong, Incheon
8	Lotte Premium Outlet Paju	 Paju, Gyeonggi
9	Hyundai Premium Outlet Songdo	 Yeonsu, Incheon
10	Lotte Premium Outlet Giheung	 Yongin, Gyeonggi
11	Shinsegae Department Store Gangnam	 Seocho, Seoul
12	Lotte Premium Outlet Icheon	 Icheon, Gyeonggi
13	Shinsegae Department Store Centum City	 Haeundae, Busan
14	Costco Wholesale Yangjae	 Seocho, Seoul
15	Costco Wholesale Gongse	 Yongin, Gyeonggi
16	Yeoju Premium Outlets	 Yeosu, Gyeonggi
17	Lotte Department Store Main Store	 Junggu, Seoul
18	Sindorim Techno Mart	 Guro, Seoul
19	Hyundai Department Store Mokdong	 Yangcheon, Seoul
20	Paju Premium Outlets	 Paju, Gyeonggi

Based on Jul. 2018 to Jun. 2019

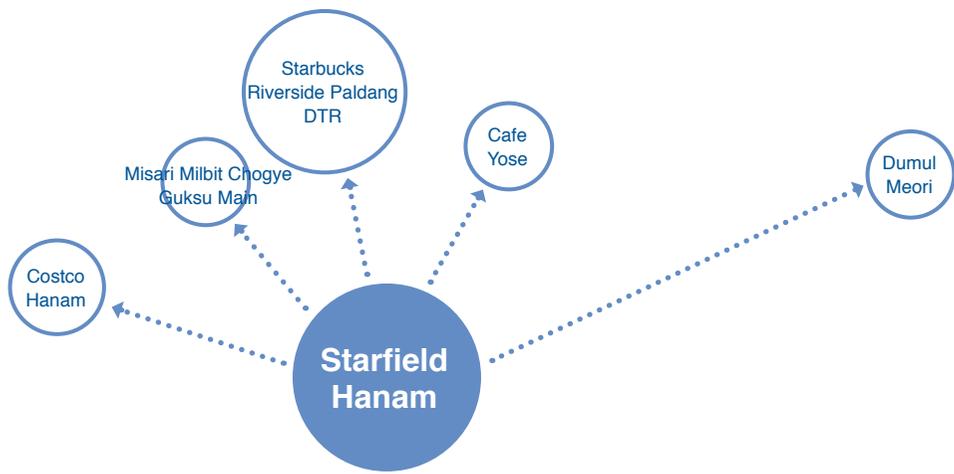
What was the next destination after visiting the most popular Starfield Hanam in the list? Many people had coffee at nearby Starbucks Riverside Paldang DTR after shopping. Then, some people went on another shopping round at Costco Wholesale Hanam.



Starfield Hanam

Next destinations after Starfield Hanam of Korea on Kakao Navi

Based on Jul. 2018 to Jun. 2019



Golf Courses

Nice Shot, Mr. Jung!

Last but not least, where people shouted “Nice shot!” the most nationwide was looked into. The most popular destination was Lakeside Country Club in Yongin-si, Gyeonggi, closely followed by BA Vista Country Club and Taekwang Country Club in Yongin-si, Gyeonggi.

Most of the top 20 golf courses were in Gyeonggi and five in Yongin, Gyeonggi. If Tiger Woods visits Korea, inviting him to Yongin would make sense. The rest of them are in Icheon, Hwaseong, Paju, Yeosu, Gwangju, Incheon, Wonju, Siheung, Pocheon, Anseong, Yangpyeong, etc.

***Fun fact:** Since domestic golf courses had been opened since the mid-to-late 1990s, the number grew by 20-30 every year. As of 2017, it reached 487 golf courses nationwide (187 for membership and 300 for public), which shows how strong our bosses' will for nice shot is.

Top 20 golf courses nationwide on Kakao Navi

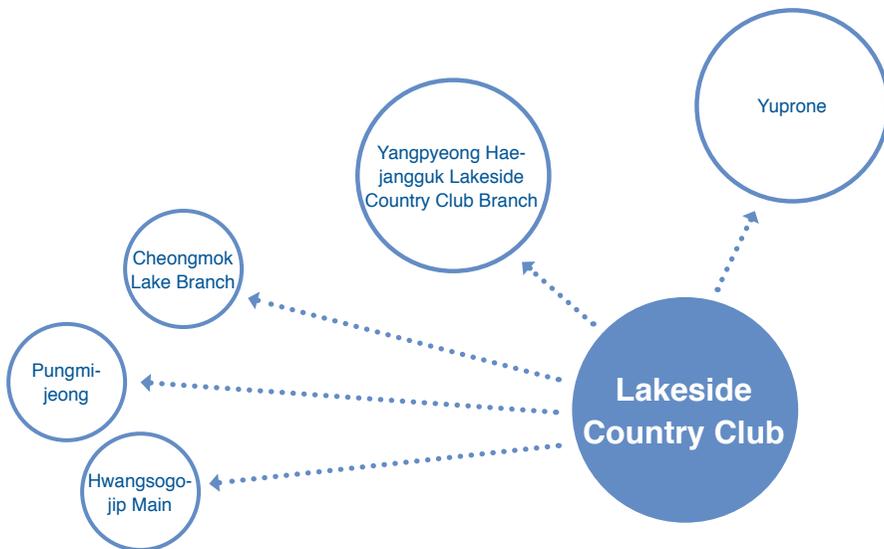
No	Golf Course	Location
1	Lakeside Country Club	Yongin, Gyeonggi
2	BA Vista Country Club	Icheon, Gyeonggi
3	Taekwang Country Club	Yongin, Gyeonggi
4	Riviera Country Club	Hwaseong, Gyeonggi
5	Seowon Hills Country Club	Paju, Gyeonggi
6	Silla Country Club	Yeosu, Gyeonggi
7	88 Country Club	Yongin, Gyeonggi
8	Giheung Country Club	Hwaseong, Gyeonggi
9	Solmoro Country Club	Yeosu, Gyeonggi
10	New Seoul Country Club	Gwangju, Gyeonggi
11	Paju Country Club	Paju, Gyeonggi
12	Suwon Country Club	Yongin, Gyeonggi
13	Lakewood Country Club	Yangju, Gyeonggi
14	Bear's Best Golf Club	Seogu, Incheon
15	Century 21 Country Club	Wonju, Gangwon
16	Gold Country Club	Yongin, Gyeonggi
17	Salt Bay Golf Club	Siheung, Gyeonggi
18	Fortune Hills Country Club	Pocheon, Gyeonggi
19	Shinan Country Club	Anseong, Gyeonggi
20	Yangpyeong TPC Golf Club	Yangpyeong, Gyeonggi

Based on Jul. 2018 to Jun. 2019

Most people who visited popular golf courses headed to nearby popular restaurants. For example, many of those who visited Lakeside Country Club went to Yangpyeong Haejanguk or Korean beef restaurant Yuprone, followed by popular restaurants nearby Yongin including duck soup restaurant Pungmijeong, pork bbq restaurant Hwangsogojip and Korean Table d'hote restaurant Cheongmok.

Next destinations after Lakeside Country Club on Kakao Navi

Based on Jul. 2018 to Jun. 2019



Kakao Navi evolves in new ways



Kakao Navi

changes your driving patterns

A 1:50,000 map was necessary to drive to a new place in the past. Some would recall that they pulled over and opened a map book and others would tell their mom or dad a direction while reading a map in the passenger seat. On the other hand, some people never believe that there was a map in the car in the past.

The emergence of car navigation did not only remove a map book in a car. This also means everyone could leave anywhere without worries about getting lost. Some people feel sorry that there is no more romance that makes people who leave for a vacation excited while reading a map book in a car. However, in an era of car navigation, people do not have to memorize each road and go the long way round because they do not know how to get where they want to go.

Car navigation is a comprehensive service that lets you know where you are, where you have to go and when you arrive. Kakao Navi has continuously enhanced the quality of data and technologies to provide higher quality of services. This parts closely looked into high technology applied into Kakao Navi.

Kakao Navi

knows all places

Driving navigation services combines different data to provide the best route for a user. Kakao Navi puts together all info ranging from essential data like a map, road network, POI⁴⁾ and categories⁵⁾ to secondary data like traffic lights, speed limits, surveillance cameras, speed bumps, and toll gates to provide a navigation service.

Above all, map data including road information and POI related data are essential factors that affect how driving directions work. For this reason, navigation service providers spend enormous time and energy on continuous update and management. If a new road is opened, Kakao Navi starts its driving navigation service for relevant road on the day when it is opened. This service would not be possible if the two following requirements are met: continuous data management and mobile device-based navigation that enables real-time services.

Meanwhile, secondary data is data that is collected and provided to provide safe and convenient driving directions for users. Information on facilities like traffic lights and surveillance cameras and events like accidents and demonstrations are included.

Kakao Navi goes beyond merely providing driving directions to a destination and provides additional info on a nearby destination. Different places like parking lots, gas stations, restaurants, cafes, accommodation and auto repair shops are classified by category on the app. This helps users to go to the next destination after they arrive at their original destination.

4) A point of interest or POI, is a specific point location that a user may find interesting like a building name, a company or shop name, and the name of an institution.

5) POI categories are systematic classification of POIs for each type.

Kakao Navi pays attention to providing essential POI information for drivers. In many cases, users should find a gas station or a parking lot around their destination. Kakao Navi provides not only the locations of gas stations on the way to their destinations but also nearby parking lots information. If relevant parking lots are on the Kakao T Paking, a real time booking service is available.

POI ratio by category on Kakao Navi

Category	Ratio	Remarks
Service-Industry	21.2%	General companies
Household goods	19.0%	Different amenities like department stores, marts
Restaurants	17.5%	Korea, Chinese, Western, etc.
Real estates	14.5%	Housing, buildings, etc.
Transportation	5.9%	Transportation facilities like subway stations and railroad stations
Education	5.1%	Schools, private institutions, etc.
Trip	4.8%	Travel destinations, accommodations, etc.
Culture-Arts	2.9%	Theaters, art galleries, museums, exhibition halls, etc.
Health	2.9%	Pharmacies, hospitals, etc.
Sports-Leisure	2.2%	Sports and leisure facilities for golf, soccer, baseball, etc.
Social-Public institutions	2.0%	Administrative institutions and major public organizations
Finance-Insurance	1.6%	Banks, securities, etc.

As of the end of July, 2019

Are you on this road?

A driver's location information is essential for driving navigation services, and GPS signals from satellites are used to get such information. However, since the accuracy of GPS signals worsens near tall buildings in the downtown, the exact location of a driver is not provided occasionally.

In this case, map matching technology is used instead. This technology improves the accuracy under a precondition that a vehicle that uses a driving navigation service is on the road. GPS location, road network arrangement, driving direction info, etc. are put together, and based on this information, all possible cases of a driver's location are identified. A probability of each case is calculated and the case with the highest probability will be the current location. In this process, a number of complicated probability models are used.

Under the situation that GPS signals are a little bit inaccurate, the exact location can be provided for a user thanks to this map matching process.

Map matching concept on Kakao Navi



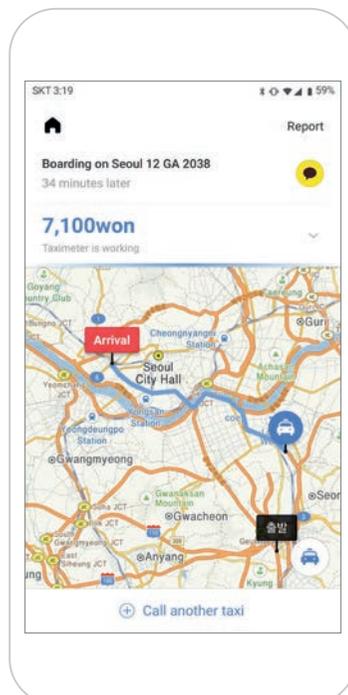
← GPS signal-based location

← Map matching technology-based location

If map matching process is repeated on the move, the actual distance travelled by a user can be calculated exactly. Especially in the downtown where GPS signals are a little bit inaccurate, and in a tunnel or on an overpass where GPS signals are gone in a moment, how much a user actually travelled can be estimated.

In addition, with map matching technology, traditional mechanical taximeter can be replaced by simple taximeter applications. Instead of existing machine methods that measure distance and fare with wheel rotations, distance and fare can be calculated on a smartphone that receives GPS signals. This taximeter application is being used for fare calculation on Kakao T Taxi and Kakao T Driver in some cases.

Kakao T app-based taximeter with map matching technology



Consistent accuracy in a tunnel with seamless location verification

Map matching technology has improved the accuracy of location, but there is still an obstacle in reality. In the regions with no GPS signals like inside of buildings, underground parking lots and long tunnels, driving navigation services can not be provided properly. Kakao Mobility is making an effort to enhance the stability of driving navigation and mobility services by detecting the exact location of a user even in this GPS shadow area.

The following is a few technologies that make it possible to detect location seamlessly in any cases.

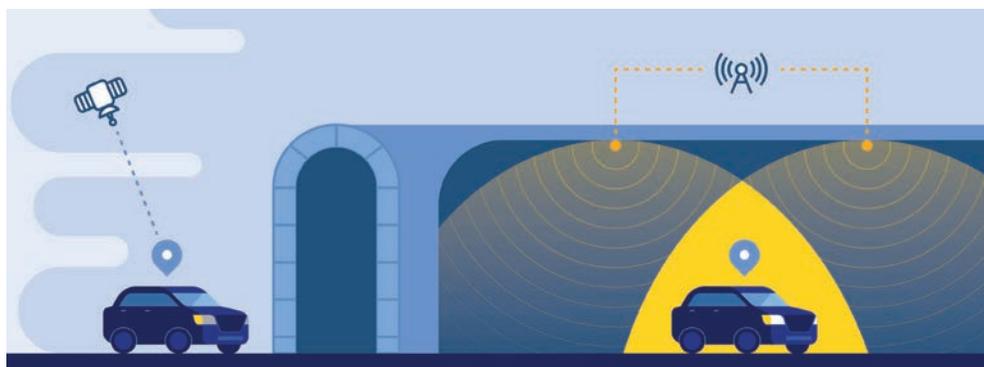
Above all, there is a method that uses wifi or mobile network on a smartphone. The patterns of signal strength depending on locations are learned and compared with received signal patterns to estimate travelled routes. Kakao Mobility, in a partnership with Korea Institute of Science and Technology (KIST), is making an effort to commercialize

the technology that increases the navigation accuracy in a tunnel, an underground space and more by using mobile network like LTE and 5G.

Kakao Mobility is also developing the technology that calculates locations based on AI and self-driving technologies. This is known as computer vision-based location verification. Features are extracted from video or image data on mobile devices like smartphones and compared with absolute coordinates to determine the estimated location of a vehicle or a mobile device.

Kakao Mobility will keep seamlessly providing a location verification service in all areas where there is a move, whether it is inside or outside. Based on enhanced location data in the future, Kakao Mobility will make an effort to upgrade mobility service experience as well as navigation service.

Location verification in a tunnel based on mobile network

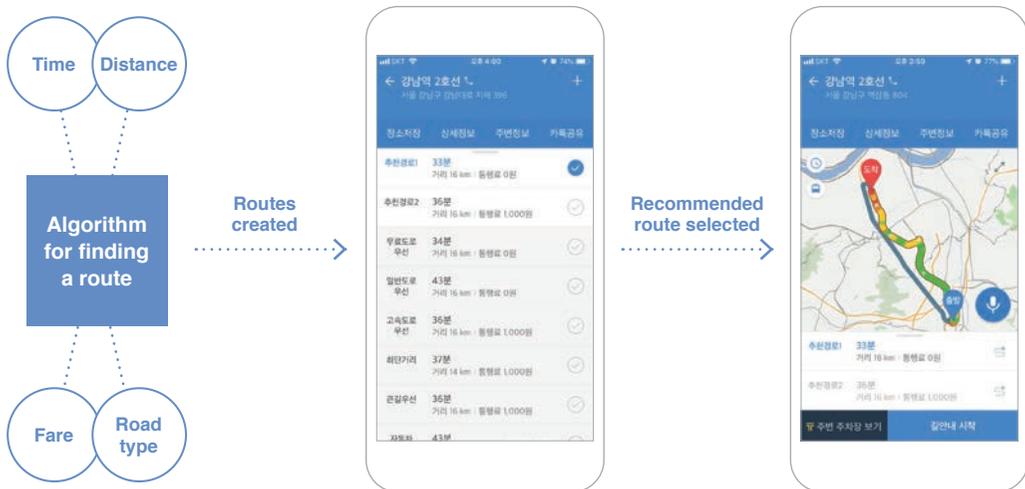


What is the best navigation service? That's definitely the most accurate for me!

The most important feature of driving navigation service is finding a route to a destination. In the past, just reaching a destination without a map made users satisfied. These days, however, a user's circumstances should be also considered to provide the best driving direction.

In order to provide optimal driving routes for users, road network data should be established exactly and kept updated. Based on such data, a number of possible routes between departure and destination points are analyzed and among them, the best one should be extracted. Kakao Navi puts priority on finding the fastest route, but provides different routes for users based on a number of data including fare, distance and road type as well as the travel time.

User experience-based routes provided in combination of different data



Finding algorithms that calculate optimal driving routes itself is a difficult task, but providing a result within a short time that makes a user satisfied is also a big technical challenge. To respond to pouring requests every moment within a short time, Kakao Mobility is using dozens of servers. Even when a demand surges like during Lunar New Year holidays and Chuseok holidays, Kakao Mobility responds to surging demands by adjusting the number of servers in a flexible way in order to provide stable services for users.

With years of experience, Kakao Mobility found out that each individual has a preference for driving routes. Some are relatively sensitive to time and others are to fares. Some prefer expressways with no traffic light and others do not mind narrow roads as long as they can go a bit faster. In order to reflect diverse demands of such users, Kakao Mobility is preparing for 'Personalized' route suggestions. In consideration of service usage patterns of similar users as well as previous service usage patterns of an individual user, Kakao Mobility is planning to provide accurate driving routes just for you so that you can use it easily right away.

Estimated travel time based on machine learning

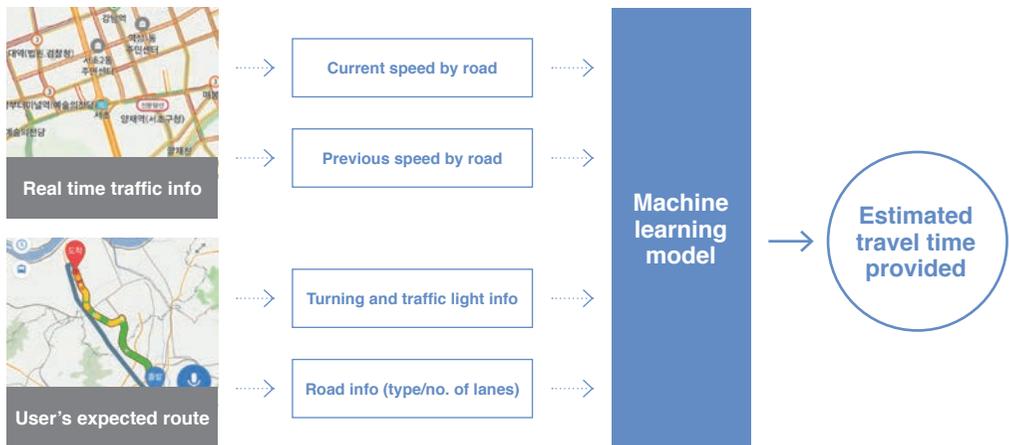
Along with driving routes, the most important factor of a navigation service is estimated travel time. Kakao Navi provides estimated travel times based on travel speed data collected from its users and road network information.

Travel time consists of individual road passage time and waiting time. Individual road passage time can be estimated on an analysis of road passage data of Kakao Navi users as mentioned above. Kakao Navi learns previous road passage patterns and builds machine learning models. Based on this, Kakao Mobility provides estimated passage time for each road. Meanwhile, waiting time is time required for turning, waiting for a traffic light to change, etc. and is calculated based on secondary information and a user's expected route.

In addition, Kakao Navi reflects diverged roads and provides estimated travel time. In a road that diverges into more than two roads, speed can be different when a driver enters into each road. For example, if many cars want to take an exit on an expressway, speed stays fast on an expressway, but speed gets slower around an exit. To reflect this circumstance, Kakao Mobility lists up diverged roads and provides different estimated speeds for each road to determine an estimated travel time.

Sometimes, unusual speed is detected for some reasons. For example, many users stopped at a gas station or a service area on an expressway. If this case is not reflected, it can be calculated that an estimated speed on a road is lower than actual speed. Kakao Mobility uses sophisticated algorithms so that such unusual data can be removed. In this process, Kakao Mobility is making an effort to decrease the margin of error of estimating the total travel time.

Navigation travel time estimation system based on machine learning



How will it take to get there tomorrow?

Future Travel Information

Some users wonder how traffic conditions are like when I actually leave tomorrow, not right now. With its Future Travel Information service, Kakao Navi provides an estimated travel time for a future time as well as an estimated travel time on a real time basis. While a travel time is generally estimated based on real time traffic information, the Future Travel Information service has no choice but to estimate and provide travel time for a future moment only based on existing traffic patterns.

Kakao Navi uses different methods to get an exact result under such limited conditions. Types of dates are first classified in detail and applied to estimation. As travel speed or traffic volume is related to users' daily travel patterns, these factors are significantly affected by day of the week or holidays. In particular, traffic patterns during holidays are totally different from ordinary traffic patterns. For this reason, types of dates need to be classified separately. This classification improves the accuracy of estimation.

For the Future Travel Information service, ordinary roads and diverged roads are separately managed and a speed difference between a main road and its branch road is estimated and reflected to estimate the total travel time. Recently, road network information and existing traffic patterns are used to automatically generate information on diverged roads. In addition, in order to decrease the margin of error of estimating the travel time late at night with less traffic volume, algorithms have been sophisticated to reflect traffic patterns around late at night.

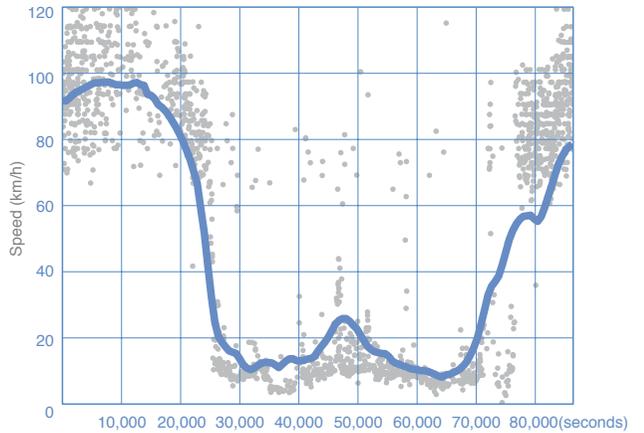
The Future Travel Information service is provided by default on Kakao Navi and Kakao Map. Meanwhile, Kakao Mobility has built a channel for third parties including transportation companies and passenger service providers so that they can use relevant information.

Future Travel Information service on Kakao Navi



Examples of changing travel speed over time

Speed varies through time on many roads

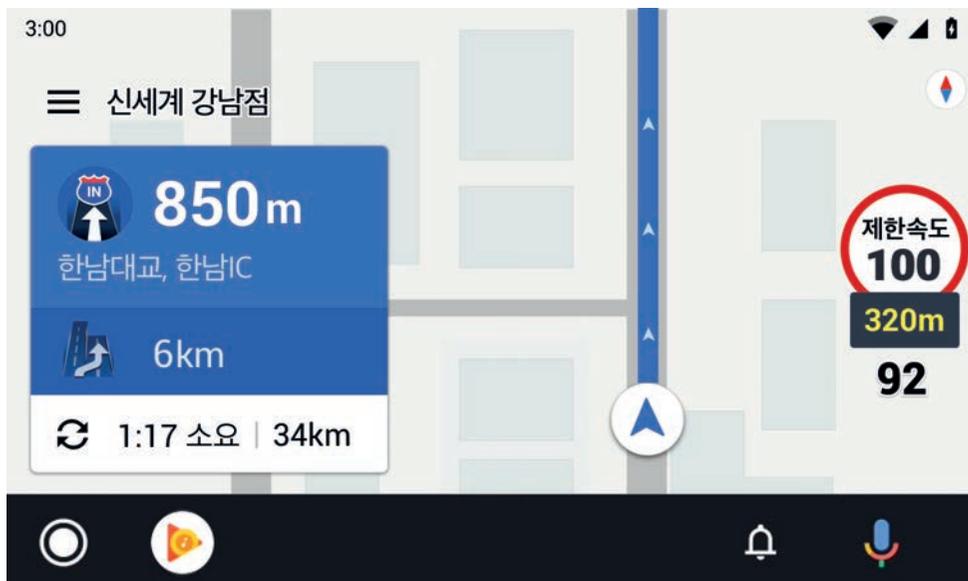


Google's Android Auto and Apple's CarPlay meet with Kakao Navi

Android Auto is Google's proprietary infotainment system for a vehicle. Its big touch screen, simple interface and support from Google Assistance help drivers to focus on driving while using a smartphone. This system is available on more than 500 car models from Hyundai and KIA, popular brands among Koreans and Tata India to 007 James Bond's favorite car maker, Aston Martin.

A navigation system is very important in in-vehicle infotainment systems. However, Google did not provide navigation services in Korea because exporting local mapping data was prohibited. Google decided to build a partnership with Kakao Navi. Google's Android Auto integrates with Kakao Navi instead of using its Google Map or Waze Map, which is the world's first integration with third party navigation service.

Android Auto demonstration image



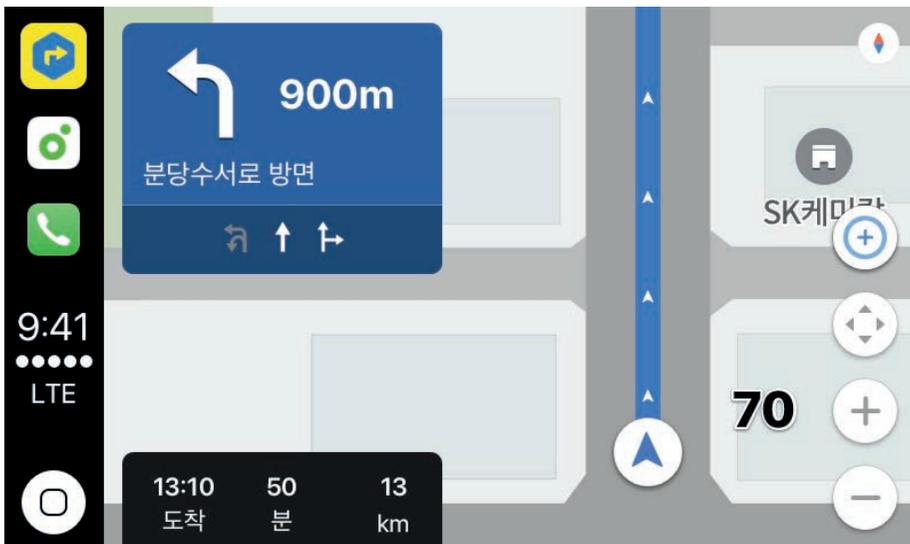
It's not an end. Apple, Google's eternal rival in the smartphone, also provides CarPlay that lets users use a smartphone more easily and safely while driving. Kakao Navi also started to provide a third party navigation service for Apple's CarPlay since it provided a navigation service for Google's Android Auto for the first time in Korea.

If Apple's voice-activated Siri is on and iPhone is connected to a vehicle, Apple's CarPlay runs right away. Apple also supports more than 500 car models like its eternal rival does.

Kakao Navi is the only navigation service in the nation that supports both Android Auto and Apple's CarPlay. This proves that it is recognized as a reliable navigation service among global companies as well as ordinary customers.

Let's connect a smartphone and start the engine so that you can use Android Auto and Apple's CarPlay. Now, Kakao Navi directions are available on a built-in big display.

Apple's CarPlay demonstration image





Feature Story: Kakao T in Jeju

Let's go to Jeju... just two of us...
under the stars and blue night sky





There are so many good things in Jeju

Jeju. When you read the word, it's like making you feel the sea breeze on your ears. When you read the word out loud, it's like making mandarine orange flavor spread around. When you close your eyes softly, it's like you can hear the sound of sizzling pork of Jeju Black Pig while looking out over Dolharbang. Now it's time to fall under the spell of Jeju.

You must have visited Jeju several times or are highly likely to go there. For those who are looking for where to go in Jeju, hot places in Jeju were found based on popular departure and destination points on Kakao T Taxi and driving direction data on Kakao Navi.

Administrative district

Jeju Special Self-Governing Province

Location

An island south-west of the mainland of Republic of Korea

Area

1,833 km²

Population

Approximately 700,000 Jeju residents

Annual tourist

Approximately 14 million tourists



Top 20 departure points in Jeju on Kakao T Taxi

Let's start with popular departure and destination points on Kakao T Taxi. The most popular departure point was Ramada Plaza Jeju, followed by Jeju International Airport, Jeju CBS and Eco de Paris Jeju. For reference, Jeju CBS and Eco de Paris Jeju are closely located right across the road from each other. The Ocean City 1-cha officetel, Hanmaeum Hospital and Hotel RegentMarine Jeju and Jungang Hospital were in the upper ranks.

Different categories including hotels, airports, broadcasting stations, hospitals, funeral services and marts were mixed in the list. That's why there is a small difference in popular departure points between local people and tourists.

No	Departure	Location
1	Ramada Plaza Jeju	 Samdo 2-dong
2	Jeju International Airport	 Yongdam 2-dong
3	Jeju CBS	 Yeon-dong
4	Eco de Paris Jeju	 Yeon-dong
5	The Ocean City 1-cha Officetel	 Yeon-dong
6	Hanmaeum Hospital	 Ildo 2-dong
7	Hotel RegentMarine Jeju	 Geonip-dong
8	Jungang Hospital	 Iho-dong
9	Tom N Toms Jeju City Hall	 Ildo 2-dong
10	CU Jeju Ara I'Park	 Ara-dong.
11	Bumin Funeral Service	 Ildo 2-dong
12	Best Western Hotel Jeju	 Nohyeng-dong
13	Ocean Suites Jeju Hotel	 Samdo 2-dong
14	Grabel Hotel	 Oedo-dong
15	Ramada Jeju City Hall	 Ildo 2-dong
16	Hwabukjugong Mart	 Hwabuk-dong
17	Maison GLAD Jeju	 Yeon-dong
18	Merchen House Residence	 Nohyeng-dong
19	I Jin Hotel	 Yeon-dong
20	Residence Eco GL	 Nohyeng-dong

Based on service completed from Jul. 2018 to Jun. 2019



Ramada Plaza Jeju



Jeju International Airport



Eco de Paris Jeju

Top 20 destination points in Jeju on Kakao T Taxi

The most popular destination point was Jeju International Airport, followed by Jeju City Hall in second and Jewon Intersection in third. Jeju National University, Cheju Halla University, Jeju Intercity Bus Terminal, Jeju Halla Hospital and Jeju National University Hospital were followed.

More different types of places, including airports, government offices, busy streets, universities, bus terminals, hospitals, markets, shopping centers were in the list.

***Fun fact:** Jewon Intersection in third place of top destination points is one of the busiest places. Land values in this area are the highest in Jeju.
 Jewon Intersection (X), The Golden Land Jewon (O)

No	Destination	Location
1	Jeju International Airport	Yongdam 2-dong
2	Jeju City Hall	Ildo 2-dong
3	Jewon Intersection	Yeon-dong
4	Jeju National University Ara Campus	Ara-dong.
5	Cheju Halla University	Nohyeong-dong
6	Jeju Intercity Bus Terminal	Ora-dong
7	Jeju Halla Hospital	Yeon-dong
8	Jeju National University Hospital	Ara-dong.
9	Dongmun Traditional Market	Ildo 1-dong
10	Tom N Toms Jeju City Hall	Ildo 2-dong
11	Shilla Duty Free Jeju	Yeon-dong
12	Ramada Plaza Jeju	Samdo 2-dong
13	CGV Jeju	Ildo 2-dong
14	Lotte Mart Jeju	Nohyeong-dong
15	Inje Intersection	Ildo 2-dong.
16	Ildo Gas Station	Ildo 2-dong.
17	Maison GLAD Jeju	Yeon-dong
18	Emart Sinjeju	Nohyeong-dong
19	Jungang Rotary	Cheonji-dong
20	Seogwipo Maeil Olle Market	Jungang-dong

Based on service completed from Jul. 2018 to Jun. 2019



Jeju City Hall



Jeju National University Ara Campus



Cheju Halla University

Kakao Navi usage patterns were looked into. The most popular destination was Jeju International Airport on Kakao Navi. Considering that 14 million tourists visit Jeju every year, this result seems natural. (Of course, it would not be the case if they went there by ferry.)

Seogwipo Mael Olle Market and Dongmun Traditional Market were in 2nd and 3rd. This showed how much Jeju tourists liked Jeju local products (TMI: Among popular products in Jeju are mandarins, Dolharbang, horses, Black Pigs, tilefish, conchs, green tea and pheasant taffy. However, they are not all available in a traditional market. In particular, it is almost impossible to find horses there).

In fifth place was Seongsan Ilchulbong where people get afraid before hiking up, but once they go up slowly, they get to look back on their life on a trail. Please, don't litter on a trail although you feel remorseful for your life while walking up a trail. It was designated as a natural monument.

In the 12th was Ecoland Theme Park built in the approximately 1 million km² primeval forest of Gotjawal where there is a whistle stop on the trail. There is an old-world train modeled on British steam locomotives, which is different from Thomas the Tank Engine that we're familiar with.

Besides, four beaches including Hyeopjae Beach and Hamdeok Beach were in the top 20 list. Yes, Jeju is an island surrounded by water.



Hyeopjae Beach

Fun fact

Jeju has its own vulgar language. Please try not to use these words: gwigot (a stupid person), naeyaduri (damn it) and ppalraegiddong (a boaster)

Ex: Naeyaduri! What are you doing, gwigot? You're such a ppalraegiddong! Once again, please don't say these words in Jeju.



Source: Korea Tourism Organization (Photo by Hyeongmin Yu)

Top 20 destination points in Jeju on Kakao Navi

No	Destination	Location	No	Destination	Location
1	Jeju International Airport	 Yongdam2-dong	11	Osulloc Tea Museum	 Andeok-myeon
2	Seogwipo Maeil Olle Market	 Jungang-dong	12	Ecoland Theme Park	 Jocheon-eup
3	Dongmun Traditional Market	 Ildo 1-dong	13	Seopjikoji Parking Lot	 Seongsan-eup
4	Public Parking Lot of Dongmun Traditional Market	 Ildo 1-dong	14	Saebyeul Oreum	 Aewol-eup
5	Seongsan Ilchulbong	 Seongsan-eup	15	Iho Taewu Beach	 Iho-dong
6	Hyeopjae Beach	 Hallim-eup	16	Emart Sinjeju	 Nohyeong-dong
7	Hamdeok Beach	 Jocheon-eup	17	Cheonjiyeon Falls Parking Lot	 Cheonji-dong
8	Woljeongri Beach	 Gujwa-eup	18	AquaPlanet Jeju	 Seongsan-eup
9	Emart Seogwipo	 Daeryun-dong	19	Yongduam Rock	 Yongdam2-dong
10	Jeju City Hall	 Ildo 2-dong	20	Daepo Jusangjeolli Cliff	 Jungmun-dong

Based on service completed from Jul. 2018 to Jun. 2019

Are you going to stay? Where?

There are different accommodations in Jeju just like its reputation, including hotels, pensions, condos, resorts, guest houses and campgrounds. Based on driving directions data on Kakao Navi, it was found that places that tourists visited were slightly different depending on accommodations that they stayed at.

Based on Kakao Navi data, there were three groups: 'hotel group' of users who preferred hotels, pensions, condos and resorts, 'guest house group' of users who liked staying at a guest house and 'camping group' of users who stayed at a campground. What kind of travel destinations, restaurants and cafes each group of users liked were observed.

Top 5 hot places in Jeju on Kakao Navi were loved by all groups: Jeju International Airport, Seogwipo Maeil Olle Market, Public Parking Lot of Dongmun Traditional Market, Seongsan Ilchulbong, and Hyeopjae Beach. Regardless of where they stayed, they shopped at a traditional market, looked back on their life at Seongsan Ilchulbong and went back to the airport. All groups took the same routes. It's like they lick the lid of a yogurt cup, no matter what flavor they like strawberries or grapes.

However, some destinations showed a distinct difference depending on groups. O'sulloc Tea Museum, Ecoland Theme Park, AquaPlanet Jeju, Soesokkak and Oneunjeong Gimbap were more popular among hotel group. Hiend Jeju and Kashi Abang Guksu were more popular among guest house group. Emart Seogwipo, Manjanggal Cave and Kimnyoung Beach were more popular among camping group.

A "virtual" interviews with Sort Lee (nickname, 38-yr old) who only stays in hotels and resorts, Sigle Kim (nickname, 26-yr old) who says "Let me stay at a guest house, or give me death," and Tent Choi (nickname, 50-yr Old) who says "Jeju is camping" was prepared as follows.

Destination ranking depending on Jeju tourists' types of accommodations on Kakao Navi

Places	Location	Hotel group	Guest house group	Camping group
 Osulloc Tea Museum	Andeok-myeon	8th	10th	23rd
 Ecoland Theme Park	Jocheon-eup	10th	72nd	13th
 AquaPlanet Jeju	Seongsan-eup	13th	78th	17th
 Emart Seogwipo	Daeryun-dong	27th	86th	16th
 Soesokkak	Hyodon-dong	24th	50th	35th
 Hiend Jeju	Aewol-eup	33rd	15th	84th
 neunjeong Gimbap	Jungang-dong	32nd	40th	47th
 Kashi Abang Guksu	Seongsan-eup	35th	22nd	45th
 Saryeoni Forest Path	Bonggae-dong	37th	26th	29th
 Manjanggal Cave	Gujwa-eup	46th	54th	27th
 Kimyoung Beach	Gujwa-eup	51st	20th	14th

Based on the places that showed a big difference in visits depending tourists' types of accommodations from Jul. 2018 to Jun. 2019

- Hotel group -

Do not disturb

Soesokkak, where fresh water from downstream areas of Hyodoncheon and seawater meet, and a restaurant Oneunjeong Gimhap were more popular among Jeju tourists who prefer hotels, pensions, condos and resorts. They less visited Saryeoni Forest Path and Kimnyoung Beach.

We can tell what the hotel group thinks and feels in an interview with a 38-year-old office worker Ms. Sort Lee (nickname).

Q Why do you go to Jeju?

A There are many travel destinations in Korea, but I go there for one reason: to get myself relaxed physically and mentally. When I want to get out of routines and feel relaxed, Jeju comes to my mind first.

Q Why do you only like to stay in hotels, pensions, condos and resorts?

A They have everything I need, so it's so convenient. I don't want to take care of little things in Jeju, especially when I go on a trip with my kid. I don't want to think about cleaning, washing laundry, cooking, washing dishes, organizing shoes and unclogging a drain. I just want to spend time eating and relaxing. Hotels and resorts are a perfect place.

Q Have you been to Soesokkak or Oneunjeong Gimhap?

A I went to Soesokkak a year ago. It was good to take a walk with my family. We

rowed a boat because my kid wanted to try. I've been to Oneunjeong Gimhap, but I could not eat because the restaurant was so full. It was a regret, but not that bad.

Q Have you been to Saryeoni Forest Path and Kimnyoung Beach

A My friend recommended Saryeoni Forest Path, but I didn't go because I did not go to Jeju for tracking. I went to Kimnyoung Beach before I got married, but I haven't been there recently. Compared to other beaches, it has less commercial facilities, so it was quiet and peaceful. However, since I am with my kid, I like an organized beach more.

Q Do you have something else to say?

A I want to spend time watching Netflix or Youtube and relaxing while only staying at a hotel in Jeju for a few days. I love you, my sweetheart! Are you reading this?

- Guest house group -

We are all visitors

Hiend Jeju and Kashi Abang Guksu were more popular among Jeju tourists who prefer guest houses. They less visited AquaPlanet Jeju and Ecoland Theme Park.

We can tell what the guest house group thinks and feels in an interview with a 26-year-old graduate student Single Kim (nickname).

Q Why do you go to Jeju?

A As a graduate student, I sometimes want to just go off somewhere, even if it's not Jeju. Any place where I can get away from assignments, researches and small jobs. In particular, I often go on a trip to Jeju when I have time because I can save money and time compared to travelling abroad.

Q Why do you only like to stay in guest houses?

A At a guest house, I have many chances to talk with other travelers while drinking beer. I enjoy talking with people of about my age living a totally different life during a trip because I usually meet graduate students like me. Maybe it's because my major is psychology or people who I meet here is all those who left. Anyway, Jeju is so romantic.

Q "Those who left" came to my heart. Have you met someone that you met

at a guest house later?

A I met a guy at a guest house when I went to Jeju alone last year. We got closer as we travelled together since then. We kept in touch for a while after that, then lost touch.

Q Have you heard about Hanwha AquaPlanet, Ecoland Theme Park and Hiend Jeju?

A Hanwha AquaPlanet? Is this an aquarium? I can go to an aquarium in Seoul, so I have never been in Jeju. I have never heard about Ecoland Theme Park. It sounds like a good place for a family. I don't think I would go there because I usually go to Jeju alone. I have been to Hiend Jeju and got a pic of the day there (showing it on the phone).

- Camping group -

To live, I wish to live. I wish to live in Jeju

Kimnyoung Beach and Manjanggal Cave were more popular among Jeju tourists who prefer campgrounds. They less visited Hiend Jeju and O'sulloc Tea Museum.

We can tell what the camping group thinks and feels in an interview with a 50-year-old self-employed Tent Kim (nickname)

Q Why do you go to Jeju?

A There is no place in Korea where I can enjoy nature like this (laughing out loud).

Q Why do you only like to stay in campgrounds?

A I want to enjoy nature in Jeju, so I have never thought about staying in hotels, pensions, condos and resorts. I have never stayed in a guest house (touching his beard). I have been enjoyed camping for along time, so I already have many camping gears. With them, the land becomes a bed and the sky becomes a blanket.

Q Do you grow a beard on purpose?

A Yes, i do.

Q You look great with the beard and tanned skin

A Thank you (laughing out loud).

Q Have you heard about Hiend Jeju and O'sulloc Tea Museum?

A Never heard about Hiend Jeju. I have heard about O'sulloc Tea Museum, but I have never been there. I also don't like tea.

Q Have you been to Manjanggal Cave?

A Yes. It's worth being designated a natural monument. If you go there, you can feel how great Mother Nature is. I visited last summer. It was so cold like a fridge, so it was a good place for summer. I wanted to look around all corners of the cave, but only some parts were allowed. I wish I could have seen bats really deep in the cave that was disclosed (laughing out loud while touching his beard).

There is the following line in the Talmud, the book of Jewish law: If your friend has vegetables, give meat to him. This is a saying related to true friendship. However, this also tells us how important meat and a balanced diet with fiber and protein are.

However, in the 21st century, it is awkward to suddenly give a piece of meat to a friend who is having vegetables. In addition, it is not easy to deal with information overload. The line can be substituted for the following: If your friend is about to have a meal, let him know a popular restaurant.

As mentioned above, Jeju is one of the best travel destinations in Korea with 14 million tourists a year. You will have a lot of friends who are about to have a meal (or you're about to have a meal) in Jeju. Kakao Navi would like to tell really popular restaurants for them.

In order to select really popular restaurants, locals⁶⁾ favorite restaurant and tourists⁷⁾ most visited restaurants were separately analyzed. Please prepare a pen and paper or a cell phone before going to the next page. It's time to power up your brain and stay focused.

**Pick up
meat,
tear into
it with
your mouth
and enjoy!**

6) Based on users who used the service mainly in Jeju from Jul.2018 to Jun. 2019

7) Based on users who stayed Jeju for no more than seven days among those who did not use the service mainly in Jeju from Jul.2018 to Jun. 2019



What is the most popular restaurant in Jeju?

In order to find local people's favorite restaurants, the most visited restaurants by locals and tourists ranked separately.

Among top restaurants loved by locals and tourists were Ujin Haejangguk, Jamae Guksu Nohyeong, Oneunjeong Gimbap, Jeju Kim Man-bok Main , Jamae Guksu Jeju, Kashi Abang Guksu, Ollae Guksu, Donsadon Main, and Sunokinemyeongga.

Top 20 restaurants among tourists and locals in Jeju on Kakao Navi

Tourists		
No	Place	Location
1	Ujin Haejangguk	 Samdo 2-dong
2	Jeju Kim Man-bok Main	 Ora-dong
3	Jamae Guksu JEJU	 Ildo 2-dong.
4	Ollae Guksu	 Yeon-dong
5	Oneunjeong Gimbap	 Jungang-dong
6	Kashi Abang Guksu	 Seongsan-eup
7	Myeongjin Jeonbok	 Gujwa-eup
8	Chunsimine Main	 Andeok-myeon
9	Sunokinemyeongga	 Dodu-dong
10	Donsadon Main	 Nohyeong-dong
11	Jamae Guksu Nohyeong	 Nohyeong-dong
12	Ssangdoong-e Hoejip	 Jeongbang-dong
13	Mana Restaurant	 Seongsan-eup
14	Jeju Kim Man-bok Seogwipo	 Daecheon-dong
15	Negeori Restaurant	 Cheonji-dong
16	Su Udong	 Hallim-eup
17	Nolman	 Aewol-eup
18	Jejusi Saewoori Jeju	 Samdo 2-dong
19	Jeju Kim Man-bok Dongmun Traditional Market	 Samdo 2-dong
20	Jeju Kim Man-bok Aewol	 Aewol-eup

Based on data from Jul. 2018 to Jun. 2019

Locals		
No	Place	Location
1	Neulbom Heukdwaeji	 Nohyeong-dong
2	Ujin Haejangguk	 Samdo 2-dong
3	McDonald's Jeju City Hall DT	 Ildo 2-dong
4	Jamae Guksu Nohyeong	 Nohyeong-dong
5	Oneunjeong Gimbap	 Jungang-dong
6	Jeju Kim Man-bok Main	 Ora-dong
7	Jamae Guksu Jeju	 Ildo 2-dong.
8	McDonald's Jeju Nohyeong	 Nohyeong-dong
9	Sanbang Restaurant Jeju	 Ildo 2-dong
10	Aewolhang Restaurant	 Aewol-eup
11	Kashi Abang Guksu	 Seongsan-eup
12	Ollae Guksu	 Yeon-dong
13	Dochidol Garden	 Aewol-eup
14	Hwanggeumsonkarak	 Nohyeong-dong
15	McDonald's Jeju Ildo DT	 Ildo 2-dong.
16	Donsadon Main	 Nohyeong-dong
17	VIPS Jeju Yeon-dong	 Yeon-dong
18	Sunokinemyeongga	 Dodu-dong
19	Mippen Bakery	 Daejeong-eup
20	Hwamogwon	 Yeon-dong

Based on data from Jul. 2018 to Jun. 2019

Top restaurants among locals

1st Neulbom Heukdwaeji

Neulbom Heukdwaeji located in Nohyeong-dong, Jeju took 1st place of top restaurants among locals, rather than among tourists. This restaurant can accommodate about 1,000 people at the same time and has an elevator inside the building. Due to its size, a group of people frequently visits this restaurant and its lunch menu is a good budget option.



10th Aewolhang Restaurant

Aewolhang Restaurant in Aewol-eup, Jeju, took 10th place. Bomaljuk (porridge), bomal kalguksu (noodles) and hairtail stew are its signature menu items. Someone says he can forgive one who killed his dad as soon as he eats the soup of hairtail stew here.



13th Dochidol Garden

In 13th place was Dochidol Garden located Aewol-eup, Jeju like Aewolhang Restaurant. This is one of the restaurants for Gwoendang gatherings and is big enough to eat together with its big size of parking lot. It specializes in beef, but it also has Chinese food, seolleongtang, gimchi stew and more different food on the menu. For this reason, this restaurant is full during lunch time.



Besides, Sanbang Restaurant Jeju, Hwanggeumsonkarak, Mippen Bakery and Hwamogwon were in the list. McDonald's and Vips were included, but it seems that there is no difference between Jeju and other regions as long as they don't have a Black Pig edition of BLT or tangerine favor french fries on the menu.

Iced americano, please

Q. Please fill in the blank with the correct word.

The icing on the cake in Jeju meokbang is ____.

- stomach ache
 empty stomach
 cough
 coffee

It's time to find out locals' favorite cafe. Starbucks, Mōnsant de Aewol, Vadada, Hiend Jeju, Manor Blanc, a la papa, Cafe Bomnal, Cafe Delmoondo, Terarosa, Aewol the Sunset and more were popular among both tourists and local people.

Top 20 cafes among tourists and locals in Jeju on Kakao Navi

Tourists		
No	Place	Location
1	Mōnsant de Aewol	Aewol-eup
2	Hiend Jeju	Aewol-eup
3	Vadada	Jungmun-dong
4	Cafe Delmoondo	Jocheon-eup
5	Cafe Bomnal	Aewol-eup
6	Aewol the Sunset	Aewol-eup
7	Manor Blanc	Daejeong-eup
8	Starbucks Jeju Yongdam DT	Yongdam 2-dong
9	Pacific Land The Cliff	Yerae-dong
10	Starbucks Jeju Seongsan DT	Seongsan-eup
11	Rich Mango Aewol	Aewol-eup
12	Starbucks Jeju Aewol DT	Aewol-eup
13	Terarosa Coffee Jeju Seogwipo	Hyodon-dong
14	Starbucks Jeju Jungmun DT	Yerae-dong
15	Anthracite Coffee Jeju Hanlim	Hallim-eup
16	Cafe de Seoyeon	Namwon-eup
17	Hyeopjae Sikmeulwon	Hallim-eup
18	Cafe Cotsuyeom	Gujwa-eup
19	a la papa	Yeon-dong
20	Azulejo	Seongsan-eup

Based on data from Jul. 2018 to Jun. 2019

Locals		
No	Place	Location
1	Starbucks Jeju Yongdam DT	Yongdam 2-dong
2	Mōnsant de Aewol	Aewol-eup
3	Starbucks Jeju Aewol DT	Aewol-eup
4	Vadada	Jungmun-dong
5	Hiend Jeju	Aewol-eup
6	Manor Blanc	Daejeong-eup
7	Myeongwol Elementary School	Hallim-eup
8	Espresso Lounge	Nohyeong-dong
9	a la papa	Yeon-dong
10	Cafe Bomnal	Aewol-eup
11	Cafe Delmoondo	Jocheon-eup
12	Cafe Saebil	Aewol-eup
13	Terarosa Coffee Jeju Seogwipo	Hyodon-dong
14	Starbucks Jeju Hamdeok	Jocheon-eup
15	Ultra Marine	Hangyeong-my-eon
16	Aewol the Sunset	Aewol-eup
17	Geuleomeulo Part2	Nohyeong-dong
18	Wato Coffee	Daejeong-eup
19	Starbucks Seogwipo	Daecheon-dong
20	Starbucks Jeju Seongsan DT	Seongsan-eup

Based on data from Jul. 2018 to Jun. 2019

Locals' favorite cafes

7th Myeongwol Elementary School

Myeongwol Elementary School took 7th in the list. It was a local school, but was converted into a cafe while preserving the school's appearance as much as possible. Each classroom was replaced by a cafe, a handmade crafts store and a gallery. There is a playground covered with grass, so it's fine to run on the playground. For reference, the blue door at the center of school is not a gate. It can be found elsewhere. Don't force to open it.



8th Espresso Lounge

In the 8th was Espresso Lounge with outstanding vintage interior. They roast coffee at the cafe and make bread from scratch. Maybe that's why a good smell wafts up to a visitor's flaring nostrils. Then if you look up, open space is presented with second floor opened up. However, running inside is not recommended because you may be badly hurt.



12th Cafe Saebil

Cafe Saebil took 12th. The abandoned resort, near Saebyul Oreum, has turned into Saebil. Even if there is only a resort building in the wild plains, don't worry. It is Saebil. It is pretty big and its view is the best with the whole glass walls. You become calm when you look at Saebyul Oreum, horses on a ranch and sunset. At this moment, you could smile even when you spill hot choco on your white shirt.



Besides, Ultra Marine, Geuleomeulo and Wato Coffee were in the list. Top cafes among local people are strongly recommended for tourists who visited Jeju several times and have no place to go.

Kakao T Parking as a Connected Parking-Infra Enabler



The paradox of parking supply rate of 132%

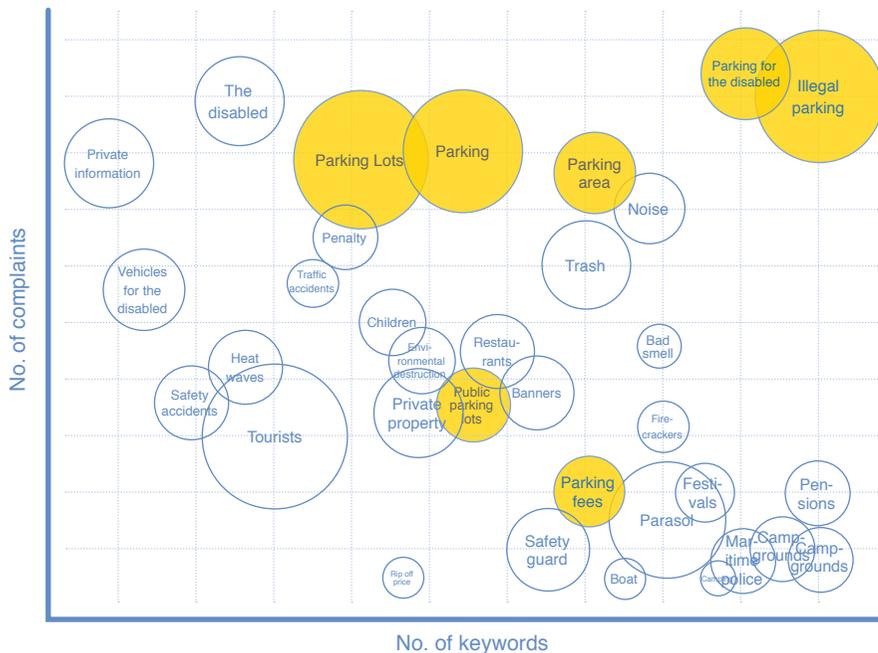
As of 2018, Seoul’s parking supply rate reached 132%. This means there are 132 parking spaces for 100 vehicles. Since the number of parking spaces is much more than the number of vehicles, it seems parking spaces are enough.

However, paradoxically, car parking in Seoul have been a major problem for a long time. Among 3.69 million cases of complaints received by the Seoul government for three years from 2015 to 2017, parking problems were the biggest part amounting to as much as 38.8%.⁸⁾

Parking problems are not limited to Seoul. According to the Complaints Big Data at a Glance provided by the Anti-Corruption and Civil Rights Commission, parking related keywords like parking lots, parking violation, parking spaces were dominant in the top keywords of complaints.

Keyword map from Complaints Big Data at a Glance

Source: ‘People’s voice for July’ from the Anti-Corruption and Civil Rights Commission on the 7th of August, 2019

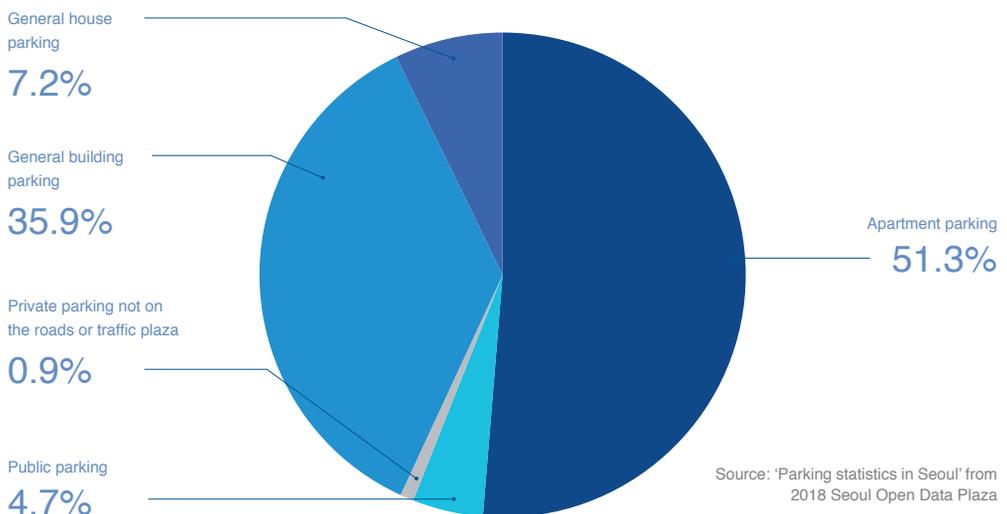


⁸⁾“This problem accounts for 38.8% complaints of Seoul citizens.” from SisalN on the 10th of April, 2018

Why are parking problems serious in Seoul where parking supply rate reached 132%? Parking lots were classified by type to easily understand why this problem continues.

As of 2018, there are about 4.13 million parking spots in Seoul. However, all parking lots are not available for ordinary citizens. 2.42 million parking spaces, 59% of total parking spaces belong to apartments, row houses, multiplex housings, and general housings, so they are only available for their residents. 1.48 million, 36% of total parking spaces are included in the general buildings, so they are mostly available for their residents or visitors. Public and private parking lots available for anyone, except ones only available for specific people, are only 5.6% of the total parking spaces. This is very small in consideration of 3.12 million registered cars in Seoul. If cars from other areas are considered, the gap is bigger.

Ratio of parking lot types in Seoul



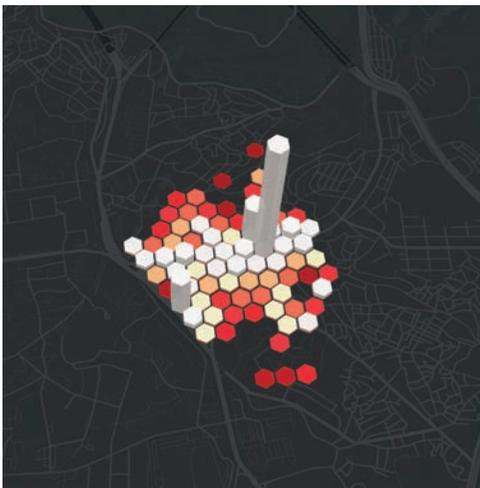
Ultimate solutions to parking problems are in sharing and connecting

The government is also making different efforts to resolve parking problems. It has newly built public parking lots and provided private companies with subsidies for constructing parking lots. However, building a new public parking lot costs a lot. In the capital area, building a single parking spot costs from 50 million won to 100 million won or more. This means that this solution has definitely a limit in reality.

A clue to the solutions can be found in driving pattern data of users by time or place. In the day-time, parking lots in companies or shops are very crowded, but those in houses are empty. On weekdays, parking lots at schools are full, but those at churches are empty. While there is no parking space at entertainment districts in Itaewon, Hongdae and Gangnam Saturday night, it is relatively okay Tuesday night.

Kakao T believes that ultimate solutions to parking problems are in 'sharing' and 'connecting.' If different supplies and demands are connected on a platform depending on places, times and days of the week, more people would be able to use parking services more easily.

Kakao Navi driving direction cases comparison between Saturday night and Tuesday night in Itaewon



Tuesday night, 25th of June, 2019



Saturday night, 29th of June, 2019

Now parking gets smarter with Kakao T Parking

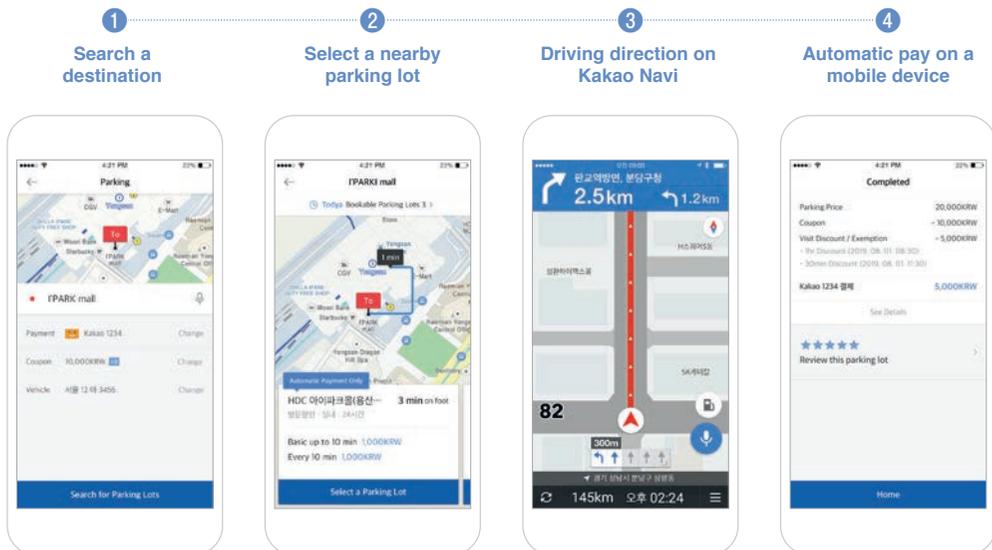
Parking means a beginning and end of travel in a vehicle. Kakao T Parking is helping people park smarter to realize the value of sharing and connecting.

If a destination point is entered on the Kakao T Parking app, parking lots within a radius of one kilometer are shown by distance and parking hours and fares for a driver are suggested. These parking lots already concluded an agreement with Kakao Mobility so that they can prepare parking spaces for Kakao T Parking users.

If a driver selects a parking lot in the list, driving directions to relevant parking lot are provided on Kakao Navi. Once he arrives and parks a car at a parking lot, parking fees, discounts and parking hours are provided on a real time basis.

Meanwhile, when he leaves a parking lot, payment is automatically made on the Kakao T app. He does not have to find a parking pay station or prepare a credit card or cash. He can just get out of the parking lot.

Automatic payment process on Kakao T Parking



Case study

Incheon International Airport

The world's top airport for 12 consecutive years. The world's smartest airport. This is Incheon International Airport that we are familiar with. Incheon International Airport introduced Kakao T Parking service to the newly established Terminal 2 in March 2019.

The parking lot at Terminal 2 is the first case for automatic payment service, one of the major Kakao T Parking services, in Korea. Automatic payment is easy on the Kakao T app anytime.

Those who park a car via Kakao T parking at the Incheon International Airport can get discount depending on conditions. If a driver drives a mini car or an eco-friendly car, discount is applied automatically on the app.

Kakao T Parking is preparing to introduce its services to 10 airports of Korea Airports Corporation including Incheon International Airport Terminal 1, Gimpo Airport, Gimhae Airport and Jeju Airport. More airport visitors are expected to experience smart parking.

Kakao T Parking user's response at the Incheon International Airport



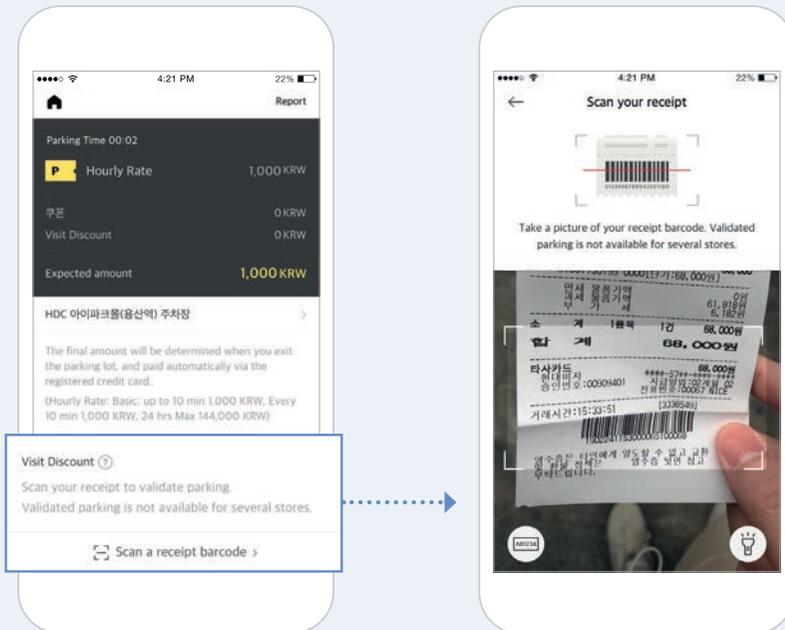
Case study

Hyundai I'Park Mall

This is home to a big fan of IMAX movies. Automatic payment and receipt barcode scanning features of Kakao T Parking were applied to parking lots of Hyundai I'Park Mall, where Yong-san Station KTX is located, which is the first case in domestic complex shopping malls.

Parking discount breakdown from different retailers as well as CGV is displayed in the Kakao T app. For example, if receipt barcode from emart mall is scanned on the Kakao T app, corresponding parking fees are discounted or exempted automatically.

Hyundai I'Park Mall Emart receipt barcode scanning on Kakao T Parking



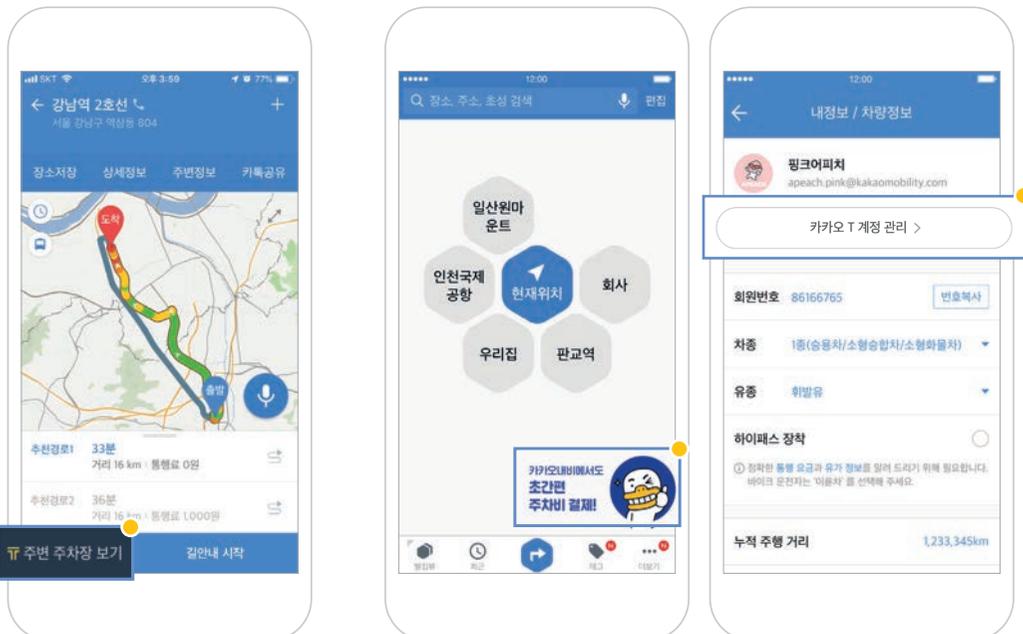
Kakao T Parking in collaboration with Kakao Navi

Kakao T Parking is bound up with Kakao Navi. Kakao T Parking is a beginning and end of travel and Kakao Navi connects its beginning and end.

If a Kakao Navi user enters a destination point, 'Show nearby parking lots' feature is activated. If he pushes this button, available parking lots around his destination are shown. Meanwhile, a Kakao Navi user can connect its account with Kakao T. In this case, automatic payment is also available on Kakao Navi.

Recommended parking lots around destinations

Connect with Kakao T



Sharing and connecting and integrating, future of Kakao T Parking

As of the end of June 2019, Kakao T Parking concluded an agreement with about 1,400 parking lots nationwide. Assuming that each parking lot has 30 parking spaces on average and construction cost per parking space is at least 50 million won in the capital area, sharing parking lots with Kakao T Parking could save as much as 3.5 trillion won.

Kakao T Parking will make an effort to connect all parking lots. By sharing and connecting available parking lots on a real time basis, Kakao T Parking is working on measures to maximize the efficiency of current parking facilities without constructing more on already limited land space.

On top of that, in a region with traffic congestion and little access to a parking lot, Kakao T Parking is considering suggesting proper parking lots outside relevant region and encouraging users to use personal mobility like a shared electric scooter or a shared shuttle. It is expected that this will play a key role of mobility services in a smart city project that central and local government are ambitiously preparing.

Furthermore, Kakao Mobility plans to put more energy to connect and integrate data that has just been used for parking and make it more valuable. It has another goal to contribute to the society by producing information that is useful for all owners, managers, tenants and visitors of buildings and central and local governments.

[Psst!] Are you a building owner? There are smart ways taxpayers can save money

Central and local governments proceed with different traffic alleviation programs by providing tax-cut benefits. The Seoul government reduces traffic impact contributions if a building owner sends the number of cars entering and exiting from its parking lot and the number of parking spaces occupied into the Parking Information System operated by the Seoul government.

Traffic impact contributions are a tax imposed on those who cause traffic congestion due to vehicles or facilities in a designated city. If a building that plans to install a new parking information system builds a partnership with Kakao T Parking, Kakao T Parking will send such info to the Seoul government.

For the first year when a parking information system is installed, 10% of installation costs and 10% of traffic impact contributions are exempted. From the next year, a smaller amount of 10% of management costs or 10% of traffic impact contributions can be exempted every year.

On top of Seoul, Sengnam and Bucheon also launched similar programs. If you are a building owner, don't miss a chance! You can benefit from additional parking incomes by sharing and connecting your parking lot that has been managed in a closed way and as well as tax cut incentives.

Kakao T Bike changes cities



Ryan and Apeach running on the road

In March 2019, Kakao Mobility introduced the electric bike sharing service Kakao T Bike. It launched a pilot project with 1000 bikes, including 600 in Seongnam, Gyeonggi and 400 in Yeonsu, Incheon.

Kakao T Bike provides a service where a user can get on and off a bike anywhere without bike rental shops or bike stations. A user can easily find a bike because locations are shown on the GPS-based app. Upon returning a bike, he can “simply” park a bike at a proper place around his destination. He does not have to rush to find a bike station or walk long distances to get to a bike station.

It has another special feature. Kakao T Bike applies electric bikes instead of general bikes. When a user pushes the pedals, an electric motor drives the wheels. Since an e-bike requires less energy, a user can easily ride on hilly terrain in Korea.

A bike is a means of transportation with a long history. In their childhood memories, men and women of all ages have learned how to ride a bike, so they are familiar with bikes. This familiarity directly leads to e-bikes. Ryan and Apeach on bikes provided by Kakao T Bike doubles such familiarity.

Inconvenient battery charging that is the only downside of e-bikes is taken care of by Kakao T Bike. It picks up batteries one by one and keeps them charged at all times.

Kakao T Bike is continuously expanding its designated areas. Recently, it launched its service in Jeonju and Ulsan and expanded the number of available bikes at the existing designated areas. This part looks into 5-month data of Kakao T Bike that has added innovation to e-bikes.

Kakao T Bike travelled around the globe 26.5 times

For five months since a trial was launched, Kakao T Bike travelled more than 1 million kilometers in total, amounting to travelling around the globe 26.5 times. Ryan and Apeach have ridden a bike a long distance, way more than a round trip from the Earth to the Moon.

**Total travel distance
on Kakao T Bike**

—
Based on services completed
from Mar. to Jul. 2019

1,065,747 km

When it's too far to walk and too close to drive

People travelled 2,443 meters on average on Kakao T Bike, about one subway stop distance and about 30-40 minutes on foot. When you feel like taking a walk, it's okay. When you're not in a mood to walk, however, it's not.

It is too close to take a taxi or drive a car to travel this distance. It's a hassle to grab a taxi or find a parking lot and it also costs money. In many cases, public transportation like a bus or a local bus does not reach where I want to go. Most demands for Kakao T Bike come from this situation.

Average travel distance on Kakao T Bike

—
Based on services completed
from Mar. to Jul. 2019

2,443 m

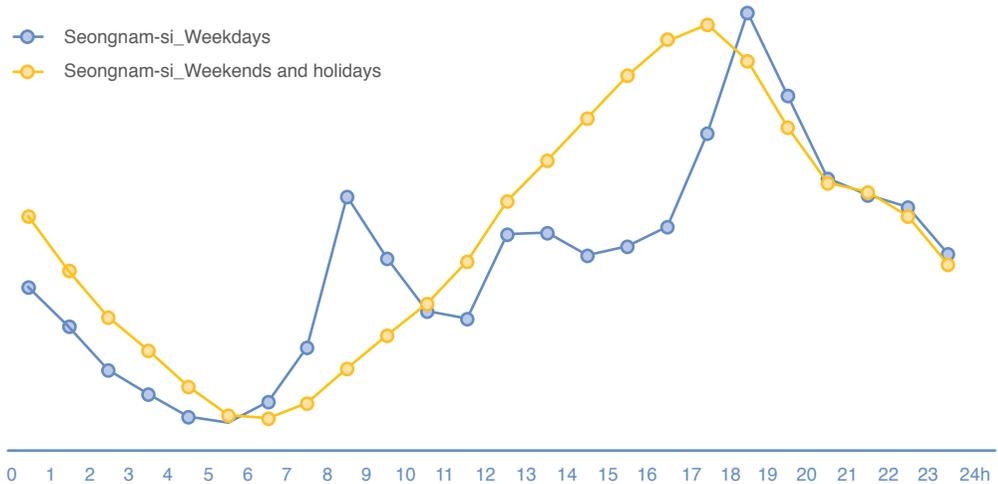
A bike runs weekdays and weekends

Like other transportation, Kakao T Bike service usage patterns are different between for weekdays and weekends. In general, many users use the service during commuting time for weekdays and from the afternoon to the evening hours for weekends for leisure. Data shows this difference more definitely.

There are most Kakao T Bike users in Seongnam. In particular, many users use the service for commuting purposes. In Seongnam, time-based usage patterns showed a sharp increase before and after 8:00 AM and 6:00 PM.

For weekends, they showed slower growth from 6:00 AM and the highest level around 5:00 PM.

Time-based Kakao T Bike service usage patterns for weekdays and weekends in Seongnam, Gyeonggi

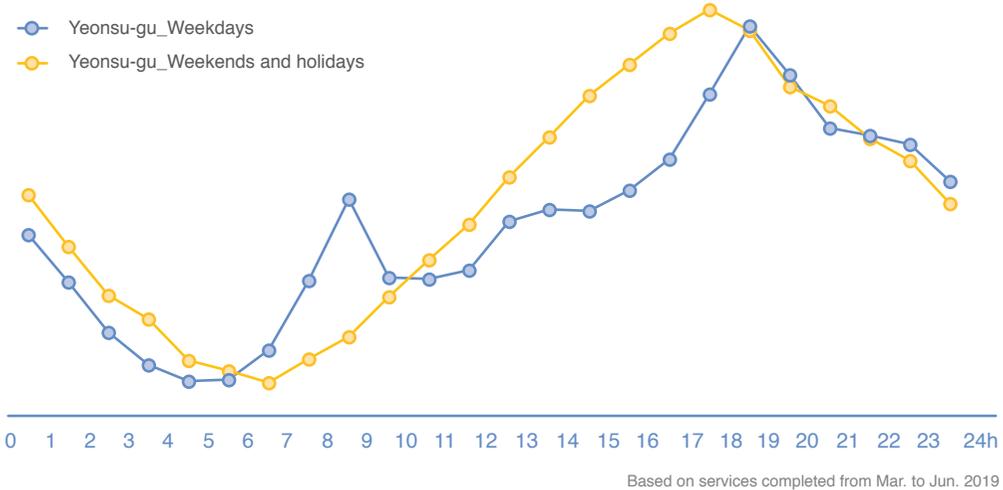


Based on services completed from Mar. to Jun. 2019

Yeonsu, Incheon showed similar patterns. However, concentration level during commuting time was lower than in Seongnam.

Such a gap seems to come from local features of Seongnam-si and Yeonsu-gu. Seongnam-si, especially Panygyo, is a business district. The statistics showed that commuting related travel reached 23.8% of the total travel. However, it was about 17.3% in Yeonsu-gu, relatively lower than in Seongnam-si.

Time-based Kakao T Bike service usage patterns for weekdays and weekends in Yeonsu, Incheon



Traffic volume during early commuting time in Seongnam, Gyeonggi·Yeonsu, Incheon

Division	Traffic volume during early commuting time(daily)	Total traffic volume(daily)	Ratio(%)
Seongnam, Gyeonggi	1,119,020	4,699,018	23.8
Yeonsu, Incheon	282,929	1,632,534	17.3

Source: Traffic volume and destination volume in 2016 by Gyeonggi-do Traffic Information Center

INTERVIEW

How do you use Kakao T Bike?

Kakao T Bike user Mr. Lee (Seongnam, 30s)



Q_How often do you use Kakao T Bike?

A_Seems like very often. 2-3 times a week? I was fascinated by this bike the first time when I used it on my way to work. Now I am using it every time I see it. Hahaha

Q_What did you like about Kakao T Bike?

A_I mostly walk to work. It's just 20 minutes away. Some day I found Kakao T Bike and used it out of curiosity. I enjoyed the cool breeze in a bike. I didn't want to go to work, but it made me feel cheerful? I keep using it because i can save time and feel refreshed in a bike.

Q_When do you use it most?

A_I usually use it while heading for work or home. I also use it when I go on an outing during weekends. When I take a walk around my neighborhood, I put some stuff in a front bike basket. This is so convenient and I like it. When I ride a bike in a park and get some fresh air, I feel so relaxed.

Q_Will you keep using it?

A_Of course. (Hahaha) Hopefully, others will try it. It is too good to be alone. More people will use Kakao T Bike in their daily life.

Useful in a region with little access to public transportation

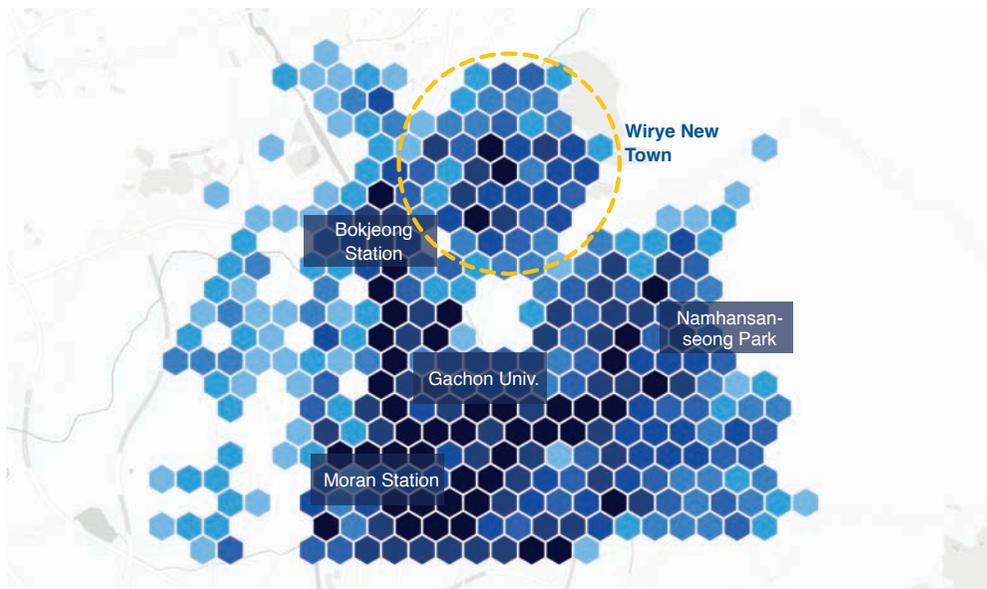
Citizens' life is closely related to public transportation. Subway stations are not only a place to take a subway, but also a good place to meet and a center of a commercial district. For this reason, most people want to live in a place that is located within easy walking distance to a subway station, called a "subway catchment area."

Inevitably, there are some areas with poor transportation where it is too far to walk to a nearby station. In particular, the lack of public transportation is worse in a new town.

Wirye New Town is one of the areas with less transportation options. It takes about 30 minutes to walk to the closest station Jangji Station. People living there have no choice but to suffer from the lack of transportation until stations that are currently under construction are completed.

For this reason, Kakao T Bike usage is especially high at Wirye New Town. The number of users is noticeable because it is not a subway station or a university. A 30-minute walking distance can be reached by riding an e-bike within 10 minutes. Although it's just a 20-minute gap, residents here may feel that it's psychologically closer.

Kakao T Bike usage at Wirye New Town in Seongnam, Gyeonggi



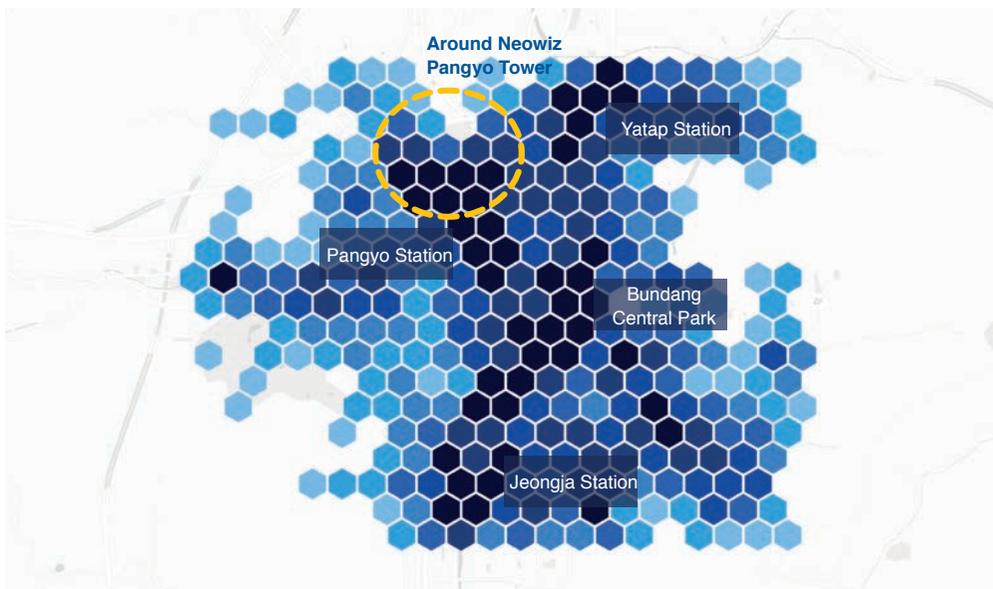
Based on departure points and services completed from Mar. to Jul. 2019

Areas around Neowiz Pangyo Tower was a similar case. This area is a business district with a number of mid to large-sized offices. It takes about 20 minutes to walk to the closest station Pangyo Station. Some people take a bus, but most bus stops do not match passengers' destinations.

As shown in the figure below, usage is relatively higher around Neowiz Pangyo Tower than in neighborhood areas. Definitely, this area showed different trends from other areas with high usage.

Even one minute is precious on the way to work. When it's urgent, walking through the streets for 20 minutes is a horror. Kakao T Bike plays a role in this business district with poor public transportation.

Kakao T Bike usage around Neowiz in Pangyo, Seongnam, Gyeonggi

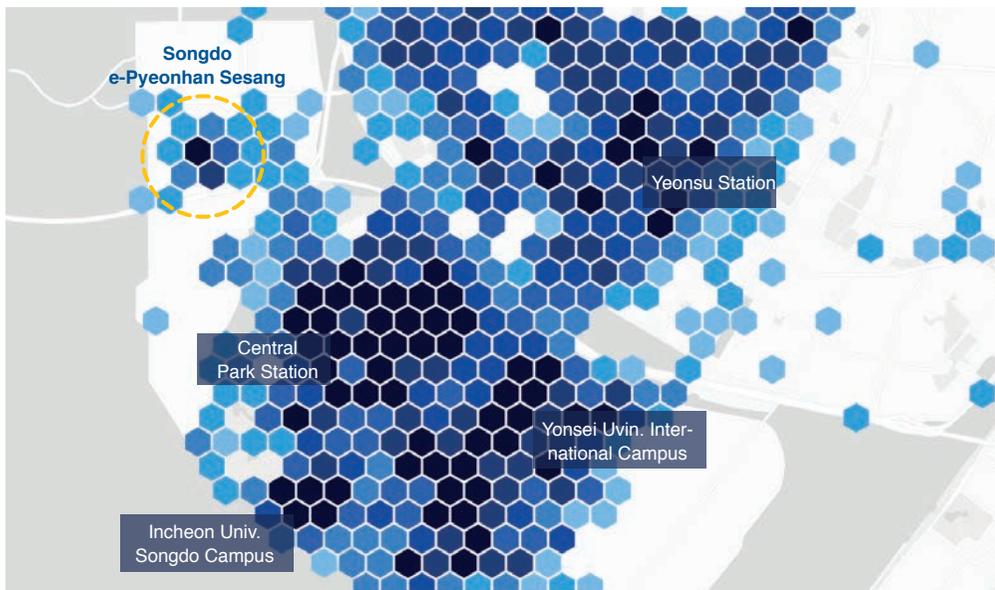


Based on departure points and services completed from Mar. to Jul. 2019

In Yeonsu-gu where Songdo International City is located, Kakao T Bike plays an important role in transportation. Songdo e-Pyeonhan Sesang, an apartment danji that has been relatively newly built, still has poor transportation. People have moved in since November 2019, but a nearby station of Incheon Subway Line 1 is scheduled to be opened in 2020. As of now, it takes about 50 minutes to walk to the closest station International Business District Station. It's too far to walk routinely.

Kakao T Bike enables about 12 minutes of travelling the same route. Kakao T Bike usage in this apartment danji is as high as in the northern area of Songdo. Kakao T Bike continuously plays a role in connecting this apartment and nearby transportation hubs until a new station is opened.

Kakao T Bike usage at Songdo e-Pyeonhan Sesang in Yeonsu, Incheon



Based on departure points and services completed from Mar. to Jul. 2019

#Kakao T Bike #Tstagram

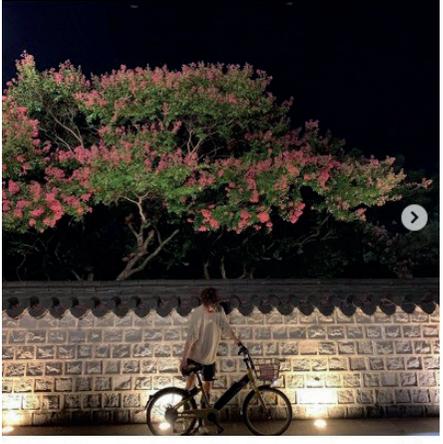
yondo_ryan_love • 팔로우
경기도성남



좋아요 767개

yondo_ryan_love *(*)_0*)?
운대장 라이언이와♡ 오늘 드디어 타봤어요~~🌸🌸🌸
#빛꽃라이딩#카카오T바이크
♡ 라이언자전거빌러타기♡
(#카카오T- 어플깔고- 신용카드등록-보증금만원내고- 자전거찾아 타기-종료후자동결제됩니다 15분천원5분당500원 ☆시범운행중☆

lexus_ux • 팔로우
전주한옥마을



좋아요 63개

lexus_ux #덕수궁돌담길
#카카오바이크

감기와 몸살이 걸렸지만 나의 자전거 의지란!!!! 천변에서 한옥마을 까지 너무 좋았다!
일 끝나고 이렇게 가끔씩 전주 투어 해야겠다!!!
밤 거리 뷰가 자전거 시야에서는 더더더 다르다🤗

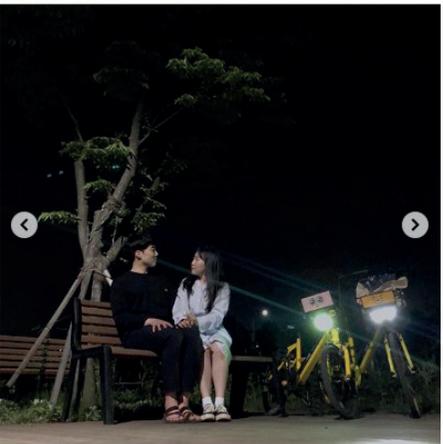
154._3 • 팔로우
Jeonju



좋아요 52개

154._3 #카카오T #카카오바이크

ozll.zr.2 • 팔로우



좋아요 70개

ozll.zr.2 하나 둘 셋 하면 찍자,,,^^ 이거 타라고 성남투어해🤗임,,
#카카오바이크
#카카오바이크후기#바이크헬멧이벤트

yena_e • 팔로우 Bundang-gu

좋아요 41개

yena_e #카카오바이크 #벚꽃구경 #전동자전거
힘하나안들이고 야탑에서 정자까지 왓당
넌 좋은 벚꽃구경이었다 WOW
#카카오T바이크 #카카오바이크후기

jihye12301 • 팔로우 Seongnam

좋아요 43개

jihye12301 #카카오T바이크 #카카오바이크후기
#바이크헬멧이벤트

카카오바이크와 함께 승승
전자자전거라 획획 나간디구요

_smilehj • 팔로우 진주 첫마중길

좋아요 30개

_smilehj 나도_카카오바이크_승승🚲
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좋아요 53개

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Kakao T Bike avenger riders

Unlike ordinary people, different heroes in Marvel movies are outliers with special powers. Among Kakao T Bike users, there are some outliers. Kakao T Bike users with special records were assembled here.

For the last 5-month service period, users who used the service most were found: one with 241 times in Seongnam and another with 238 times in Yeonsu. They are VVIPs that Kakao Mobility should thank.

Highest usage record on Kakao T Bike for each user

Seongnam, Gyeonggi

241 Times

—
Based on services completed
from Mar. to Jul. 2019

Yeonsu, Incheon

238 Times

—
Based on services completed
from Mar. to Jul. 2019

For the same period, users with the most traveled distance was found: one with 1,042 km in Seongnam and another with 687 km in Yeonsu. Taking this opportunity, Kakao Mobility would like to thank them once again.

Most traveled distance on Kakao T Bike for each user on a daily basis

Seongnam, Gyeonggi

1,042 Km

—
Based on services completed
from Mar. to Jul. 2019

Yeonsu, Incheon

687 Km

—
Based on services completed
from Mar. to Jul. 2019

Next is daily highest usage record: one with 14 times a day in Seongnam and another with 11 times a day in Yeonsu. Our authors also wonder who they are. Even Kakao Mobility staff did not make it. It is presumed that these two users wanted to go somewhere fast on bicycle for some reasons during hot summer months.

There is a saying “There is someone who has never tried, but there is no one that just tried once.” Many users who have enjoyed Kakao T Bike ride Kakao T Bike several times a day.

Highest usage record on Kakao T Bike for each user on a daily basis

Seongnam, Gyeonggi

14 Times

—
Based on services completed
from Mar. to Jul. 2019

Yeonsu, Incheon

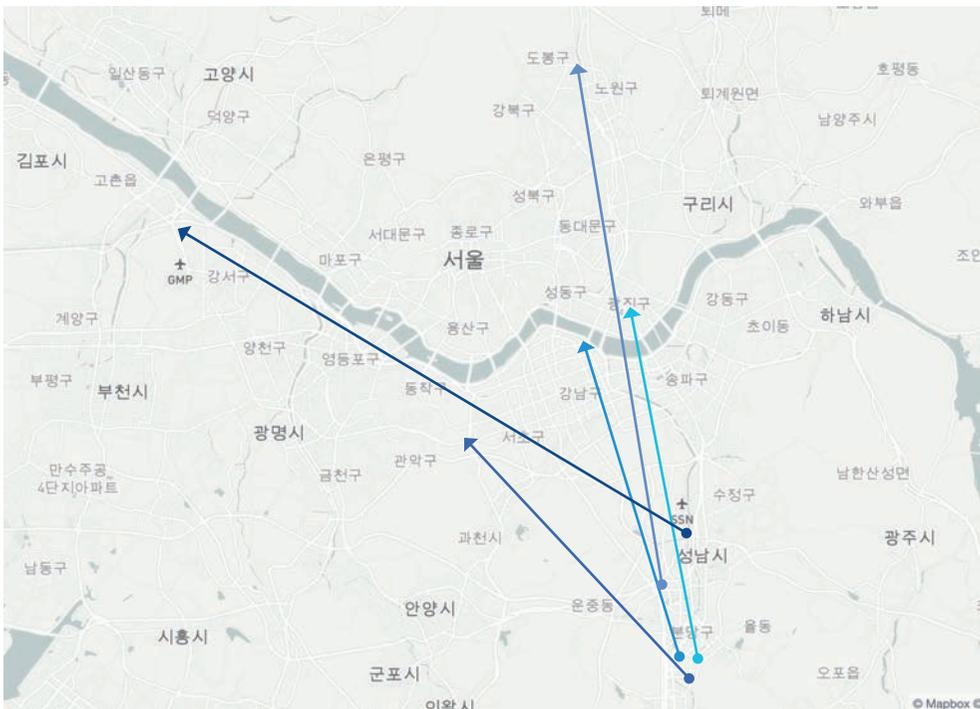
11 Times

—
Based on services completed
from Mar. to Jul. 2019

There is a user with a more unique record. For Kakao T Bike’s management and administrative reasons, a user should stop the service within a designated area. If he breaks the rule, a penalty is imposed. For example, a bike rented in Seongnam should stay in Seongnam. However, some users crossed a designated area.

A user with the longest distance record away from a designated area used Kakao T Bike from Seongnam to Gimpo Airport. It was not a user but three users who left a soccer field by Tancheon Stream at the same time and stopped at Gaehwa-dong after travelling 36 km for three and a half hours by bicycle. Kakao Mobility applaud those three people on bike riding early in the morning. Besides, some users used Kakao T Bike from Seongnam to Nowon-gu, Gwangjin-gu, Gangnam-gu or Gwanak-gu.

Cases of crossing a designated area of Kakao T Bike in Seongnam, Gyeonggi



Survey

What is the next designated region?

Kakao T Bike is currently available in Seongnam Gyeonggi, Yeonsu Incheon, Jeonju Jeonbuk and Ulsan. However, many people in other regions want to use Kakao T Bike.

Kakao Mobility conducted a survey to find out how many people in each region wanted to use Kakao T Bike in about 220 local governments. Four million users out of Kakao T Plus Friends were invited to join the survey from the 22nd to the 26th July, 2019. They were asked to select where they wanted to use Kakao T Bike. 35,468 responses were received in total.

The result showed that Suwon Gyeonggi took first place, followed by Yongin Gyeonggi, Hwaseong Gyeonggi and Gangnam Seoul. Kakao Mobility will work hard to introduce Kakao T Bike to relevant regions along with local governments.

Survey results on additional service coverage areas for Kakao T Bike

No	Location	No	Location
1	Suwon, Gyeonggi	11	Gangseo, Seoul
2	Yongin, Gyeonggi	12	Ansan, Gyeonggi
3	Hwaseong, Gyeonggi	13	Siheung, Gyeonggi
4	Gangnam, Seoul	14	Mapo, Seoul
5	Songpa, Seoul	15	Namyangju, Gyeonggi
6	Goyang, Gyeonggi	16	Namdong, Incheon
7	Bucheon, Gyeonggi	17	Nowon, Seoul
8	Anyang, Gyeonggi	18	Gwanak, Seoul
9	Seogu, Incheon	19	Yeongdeungpo, Seoul
10	Seocho, Seoul	20	Gangdong, Seoul

Based on the results of 35,468 responses from four million users among Kakao T Plus Friends surveyed from 22 to 26 July, 2019.

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