

For Coursera - IBM Data Science professional certificate

Capstone project

Finding the best place in Stockholm for a new office

Introduction

STOCKHOLM is the capital and most populous urban area of Sweden as well as in Scandinavia. It is the cultural, media, political, and economic centre of Sweden. The city stretches across fourteen islands, and while this makes the city incredibly beautiful it also puts serious constraints on the city's logistics.

Stockholm offers a great variety of co-working spaces, office hotels and office spaces both in the city centre as well as business districts outside of city.

CITY

The inner city which is referred to as "Innanför tullarna" (Inside of the toll stations) by Stockholmers is made up by five smaller parts or city districts listed below.

City, Norrmalm is considered the Central Business District of Stockholm and has the highest concentration of businesses in Stockholm. The CBD obviously has the most expensive leases, but it also has the best communications to the rest of Stockholm and Arlanda, Sweden's biggest airport (20 min by express train from Central Station).

Kungsholmen is a part of Stockholm that has become more and more popular recently, both as a residential area but also as a place to do your business. A popular business district within Kungsholmen is Lindhagen where Swedish construction giant Skanska have located their HQ.

Östermalm is the most exclusive part of Stockholm. This is where you will find the most exclusive stores, restaurants, night clubs and of course the most high-end office spaces. If you're dealing with high profile customers, Östermalm is probably where you'll want to locate your office.

Södermalm has a high concentration of creatives and creative companies such as ad agencies, media and photographers. Södermalm is also where a large portion of the Swedish gaming industry is established. DICE, Mojang, Avalanche Studios and Paradox are all located in Södermalm.

Gamla stan or Old town which it's often referred to in English is as the name suggest the oldest part of Stockholm. Tourists flock to this part of Stockholm due to its rich history and many sights such as the royal castle. The Old Town is also where the Swedish Riksdag (Parliament) is located, so high-profile management consultants and law firms are often located close to Old Town and Rosenbad where the government have their seat.

OUTSIDE OF CITY CENTRE

Kista is an important business centre, located approximately 10 kilometers north of the inner city. Kista is the home of the Swedish telecommunication industry and Ericsson have their HQ located here. Due to Ericsson presence in the area many international telecommunication and tech companies have chosen to locate their Swedish offices in Kista. Nokia, Huawei, Microsoft, IBM, Samsung and many more all have their Swedish HQs in Kista. Although there are many big companies located in Kista there is really not much going on after office hours.

An up and coming business center in the Stockholm region is **Solna**, which lies in between the inner city and Kista. One of Sweden's biggest banks, Swedbank, recently relocated their entire business here. Vattenfall, the huge state-owned power company also recently built new office and relocated their business to Solna. In general, the rents are lower in Solna, but you still have great communications to the rest of Stockholm by subway, commuter train and busses.

Business problem

Company "Zzz" is expanding and looking for a new suitable office location in Stockholm area.

There are many factors the stakeholders need to consider. Depending on what kind of business you run and who your customers are, different parts of Stockholm might be more or less suitable for your office location.

The right office is also a key to attracting and retaining top talent. A perfect office space makes for productive and happy employees and eating right, exercising, taking care of oneself - that's a societal trend that businesses should embrace. Office location matters because people don't want a long commute and wish to be close to home or at least close to public transport. Another thing that employees appreciate is being near restaurants and coffee shops. Parks, green spaces and retailers close the list of places employees want their offices to be near (source: <https://startups magazine.co.uk/article-five-steps-finding-perfect-office-space>).

Leveraging Foursquare data will help company "Zzz" find the most suitable office location offering the employees proximity to public transport, restaurants, coffee shops, green spaces and gyms.

Data

To perform this analysis, we will use the following data:

- List of the districts (neighbourhoods) in Stockholm and their coordinates - partial list of districts found on [https://en.wikipedia.org/wiki/Category:Districts_of Sweden](https://en.wikipedia.org/wiki/Category:Districts_of_Sweden), however as this list is incomplete I added a few major districts like Kista, Nacka, Solna.
- List of neighbourhoods' coordinates - geo-coordinates of the districts in Stockholm obtained via geocoder

	Neighbourhood	Latitude	Longitude
0	Aspudden	59.3080	17.9961
1	Djurgården	59.3263	18.1132
2	Fredhäll	59.3294	18.0008
3	Fruängen	59.2851	17.9620
4	Gamla stan	59.3257	18.0719
...
61	Traneberg	59.3359	17.9856
62	Ullsunda	59.3369	17.9639
63	Vällingby	59.3671	17.8691
64	Åkeshov	59.3397	17.9287
65	Äppelviken	59.3268	17.9719

- Venues of the districts and neighbourhoods - to find the best location out of many districts and neighbourhoods in Stockholm I will leverage Foursquare data via Foursquare API.

	name	categories	lat	lng
0	Science Fiction Bokhandeln	Bookstore	59.324047	18.070682
1	Tradition	Scandinavian Restaurant	59.325940	18.073710
2	Stortorget	Plaza	59.324973	18.070727
3	19 Glas Bar & Matsal	Wine Bar	59.324633	18.068670
4	Gustaf III-statyn	Outdoor Sculpture	59.326780	18.075030
...
95	Gamla riksdagshuset	Building	59.324846	18.065033
96	Zum Franziskaners Bakfickan	Beer Bar	59.322278	18.074248
97	Räntmästartrappan (B)	Bus Stop	59.322098	18.074320
98	Djurgården 8	Boat or Ferry	59.323895	18.078907
99	Birger Jarls torg	Plaza	59.325062	18.063885