

Final Project

## The Battle of Neighborhoods

Best Location for Bookstores near Swiss  
Universities

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## **1. Introduction**

### **1.1 Background Information**

Swiss Universities are one of the world's leading universities in the world, which are located quite high up in the rankings. They gather not just Swiss people but also many international students. They are conducting various research that are discussed worldwide.

Students can be a great target group for many businesses. For example, students need books and other stationaries, therefore, the area near Swiss Universities can be opportunistic for bookstores.

### **1.2 Problem**

Bookstore owners need to understand whether opportunities for bookstores exist near Swiss Universities. Therefore, an analysis needs to be conducted which examines the venues near Swiss Universities. This will help to determine if there are already other bookstores, competitors, at those locations, and whether bookstores are popular among students nowadays. This project is aimed at finding business opportunities for bookstores near Swiss Universities.

### **1.3 Interest**

Living in Switzerland, recently being a student myself, I have noticed that there are not many bookstores near universities. I got interested in whether there is a perspective for this kind of business at such locations as universities.

## **2. Data Acquisition and Clean-Up**

### **2.1 Data Source**

To be able to proceed with the project, we need to have a list of Swiss Universities and their geographical coordinates to be able to examine the venues near them.

The list of Swiss Universities can be withdrawn from Wikipedia. The table of Swiss Universities is scraped from Wikipedia.

There are only 12 institutions in Switzerland that have a status of a university. Therefore, the geographical coordinates can be found and inserted manually for them.

## 2.2 Data Clean-Up

After Wikipedia page is scraped, the following dataframe is received:

	Institution	Abbreviation	Location	Founded	Language	Type	Enrollment
0	University of Basel	UNIBAS	Basel	1460	German / English	Public (cantonal)	12852
1	University of Bern	UNIBE	Bern	1834	German / English	Public (cantonal)	17882
2	University of Fribourg	UNIFR	Fribourg	1889	French / German	Public (cantonal)	10000
3	University of Geneva	UNIGE	Geneva	1559	French	Public (cantonal)	16530
4	University of Neuchâtel	UNINE	Neuchâtel	1838	French	Public (cantonal)	4173
5	University of Lausanne	UNIL	Lausanne	1537	French	Public (cantonal)	13500
6	University of Lucerne	UNILU	Lucerne	2000	German / English	Public (cantonal)	3037
7	University of Lugano	USI	Lugano	1995	Italian / English	Public (cantonal)	2862
8	University of St. Gallen	HSG	St. Gallen	1898	German / English	Public (cantonal)	8553
9	University of Zurich	UZH	Zurich	1833	German / English	Public (cantonal)	26356
10	Swiss Federal Institute of Technology Lausanne	EPFL	Lausanne	1853	French / English	Public (federal)	10686
11	Swiss Federal Institute of Technology Zurich	ETH / ETHZ	Zurich	1855	German / English	Public (federal)	20607

Table 1: Initial Data

Some data in this dataframe is not relevant for the project, therefore, columns "Founded", "Language", "Type", "Enrollment" are deleted. Thus, we get a new dataframe, which contains only three columns: "Institution", "Abbreviation", "Location".

	Institution	Abbreviation	Location
0	University of Basel	UNIBAS	Basel
1	University of Bern	UNIBE	Bern
2	University of Fribourg	UNIFR	Fribourg
3	University of Geneva	UNIGE	Geneva
4	University of Neuchâtel	UNINE	Neuchâtel
5	University of Lausanne	UNIL	Lausanne
6	University of Lucerne	UNILU	Lucerne
7	University of Lugano	USI	Lugano
8	University of St. Gallen	HSG	St. Gallen
9	University of Zurich	UZH	Zurich
10	Swiss Federal Institute of Technology Lausanne	EPFL	Lausanne
11	Swiss Federal Institute of Technology Zurich	ETH / ETHZ	Zurich

Table 2: Data After Deletion of Columns

Then, geographical coordinates are manually inserted to newly created columns in a dataframe: “Latitude” and “Longitude”.

	<b>Institution</b>	<b>Abbreviation</b>	<b>Location</b>	<b>Latitude</b>	<b>Longitude</b>
0	University of Basel	UNIBAS	Basel	47.558600	7.583600
1	University of Bern	UNIBE	Bern	46.950519	7.438109
2	University of Fribourg	UNIFR	Fribourg	46.806250	7.151740
3	University of Geneva	UNIGE	Geneva	46.199496	6.145142
4	University of Neuchâtel	UNINE	Neuchâtel	46.993730	6.938547
5	University of Lausanne	UNIL	Lausanne	46.521075	6.580322
6	University of Lucerne	UNILU	Lucerne	47.049444	8.312222
7	University of Lugano	USI	Lugano	46.011000	8.958000
8	University of St. Gallen	HSG	St. Gallen	47.431667	9.374722
9	University of Zurich	UZH	Zurich	47.374593	8.548889
10	Swiss Federal Institute of Technology Lausanne	EPFL	Lausanne	46.519174	6.566653
11	Swiss Federal Institute of Technology Zurich	ETH / ETHZ	Zurich	47.376402	8.548025

*Table 3: Data With Latitude and Longitude*

For convenience, the column “Institution” is renamed to “Neighborhood” and the column “Location” is renamed to “Borough”. Hence, a final dataframe is built.

	<b>Neighborhood</b>	<b>Abbreviation</b>	<b>Borough</b>	<b>Latitude</b>	<b>Longitude</b>
0	University of Basel	UNIBAS	Basel	47.558600	7.583600
1	University of Bern	UNIBE	Bern	46.950519	7.438109
2	University of Fribourg	UNIFR	Fribourg	46.806250	7.151740
3	University of Geneva	UNIGE	Geneva	46.199496	6.145142
4	University of Neuchâtel	UNINE	Neuchâtel	46.993730	6.938547
5	University of Lausanne	UNIL	Lausanne	46.521075	6.580322
6	University of Lucerne	UNILU	Lucerne	47.049444	8.312222
7	University of Lugano	USI	Lugano	46.011000	8.958000
8	University of St. Gallen	HSG	St. Gallen	47.431667	9.374722
9	University of Zurich	UZH	Zurich	47.374593	8.548889
10	Swiss Federal Institute of Technology Lausanne	EPFL	Lausanne	46.519174	6.566653
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*Table 4: Final Dataframe*

### 3. Methodology

To examine the venues near Swiss Universities, Foursquare API is used. Firstly, a function is created and run that extracts the categories of venues near Swiss Universities in the radius of 500 meters. Thus, a new dataframe with venues is generated. It is called “venues”.

Then, the number of venues in each neighbourhood is counted.

	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Neighborhood						
Swiss Federal Institute of Technology Lausanne	14	14	14	14	14	14
Swiss Federal Institute of Technology Zurich	72	72	72	72	72	72
University of Basel	28	28	28	28	28	28
University of Bern	75	75	75	75	75	75
University of Fribourg	41	41	41	41	41	41
University of Geneva	78	78	78	78	78	78
University of Lausanne	4	4	4	4	4	4
University of Lucerne	87	87	87	87	87	87
University of Lugano	12	12	12	12	12	12
University of Neuchâtel	33	33	33	33	33	33
University of St. Gallen	13	13	13	13	13	13
University of Zurich	43	43	43	43	43	43

*Table 5: Number of Venues near Swiss Universities*

Next, the number of unique categories is calculated. It accounted for 125 unique categories.

Afterwards, an analysis of each venue near universities is conducted. It is done with one hot encoding as well as by grouping rows by university and by taking the mean of frequency of occurrence of each category. As far as the core of this project is about bookstores, the category “bookstore” is taken onto consideration, and a new dataframe “book” is created. This dataframe shows the occurrence of bookstores near Swiss Universities. This data can give an idea whether there are competitors, other bookstores, near the universities.

	Neighborhood	Bookstore
0	Swiss Federal Institute of Technology Lausanne	0.000000
1	Swiss Federal Institute of Technology Zurich	0.000000
2	University of Basel	0.000000
3	University of Bern	0.013333
4	University of Fribourg	0.024390
5	University of Geneva	0.012821
6	University of Lausanne	0.000000
7	University of Lucerne	0.000000
8	University of Lugano	0.000000
9	University of Neuchâtel	0.000000
10	University of St. Gallen	0.000000
11	University of Zurich	0.000000

*Table 6: The Occurrence of Bookstores Near Swiss Universities*

Next, 25 most common venues near Swiss Universities are examined. It is done to see whether bookstores are popular destinations among students and to understand what are, in general, preferred locations for students. These insights can help to see business opportunities near Swiss Universities.

## 4. Results

As a result, it is possible to notice that there are only three universities out of twelve that have bookstores at their proximity: "University of Bern", "University of Fribourg" and the "University of Geneva". It is an interesting fact that all these three universities are in the Western part of Switzerland.

Moreover, if we look at three universities, near which bookstores are located, we can see that even though bookstores are located there, they are not the most popular venues. Only for the "University of Fribourg" it is one of the 25 most common venues.

## 5. Discussion

A few interesting observations were made during this project:

- There are not many bookstores near Swiss Universities, even though students could be a big target group for bookstores.

- Bookstores are not the most popular venues for students.
- Bookstores that are located near Swiss Universities, are in the Western part of Switzerland.
- The most popular venues for students are the ones which are related to food and drinks.

The assumption to these statements is that due to the time of digitalization students do not need stationaries or physical books anymore because all of these can be kept in one laptop. Moreover, culture can be a good sign when deciding on whether to open a bookstore near Swiss Universities. In the Western part of Switzerland, the majority of people are French speaking, and they differ from the people living in the Central, East and North Switzerland, who are mostly German speaking, or in the South of Switzerland, who are mostly Italian speaking.

### **5.1 Recommendations**

Therefore, the recommendation to bookstore owners would be to open a bookstore in the Western part of Switzerland, near such universities as University of Neuchâtel, University of Lausanne, or Swiss Federal Institute of Technology Lausanne. Moreover, I would recommend reconsidering a business model, and to combine what students attend most: coffee shops, bakeries, cafes, restaurants. So, it could be a bookstore/coffee shop, for example, where students can buy take-out coffees in the bookstore, and sit there with friends, study there. It could be something like Starbucks with an integrated bookstore.

## **6. Conclusion**

In conclusion, the aim of this project was met. An analysis of venues near Swiss Universities was conducted, revealing some interesting observations that are mentioned in the Discussion part, and the recommendations were made. It is important to notice that this research has limitations. Firstly, only Swiss Universities were taken into account. However, there are other educational institutions in Switzerland, as business schools, colleges, etc. Secondly, all this project is based on observations and personal assumptions based on the locations' analysis. It does not include any scientific background and literature. Nevertheless, it did reveal some helpful patterns, based on which the recommendations were made.