



# Applied Data Science Capstone Project

Find the best location for a new  
bakery in Chengdu, China



A top-down view of various baking ingredients and tools on a dark surface. In the top left, a glass bowl contains yellow egg yolks with a white whisk resting inside. Below this, a blue and white checkered cloth is partially visible. To the right of the cloth are two brown eggs. In the bottom left, a large glass bowl is filled with white flour, with a wire whisk leaning against its side. The word 'CONTENTS' is overlaid in white, bold, sans-serif capital letters on the left side of the image.

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# Introduction

- ▶ With the development of globalization, more and more Chinese people start to buy products from western bakeries, especially for college students and white-collar workers.
- ▶ A friend of mine wants to open a western-style bakery in some division of Chengdu in China. He asked me to help him to find the best place for it.
- ▶ In order to find the best place for a bakery, I will need to leverage some information about the divisions in Chengdu.

# Business Problem

- ▶ The main business problem attacked in this work is based on how to determine the optimum location for a new business – a bakery.
- ▶ Certain types of enterprises tend to be built in the same areas because of economic incentive or public regulations.
- ▶ I must be sure that there will be enough customers for the bakery, and on the other hand that there are not already too many other similar bakeries in the same division.

# Business Problem

## City Profile

What are the main divisions in Chengdu? Where are the bakeries concentrated?

## Location of Venues

Where are the already established bakeries located?

Where are the universities and office areas that can contribute to the success of the bakery located?





# Data

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## Administrative Divisions of Chengdu and Geographical Coordinates

- Names and postalcodes of the 21 divisions in Chengdu, with their geographical coordinates (data to be extracted using the Google Geocoder API)

## Universities and Office Areas Names and Geographical Coordinates

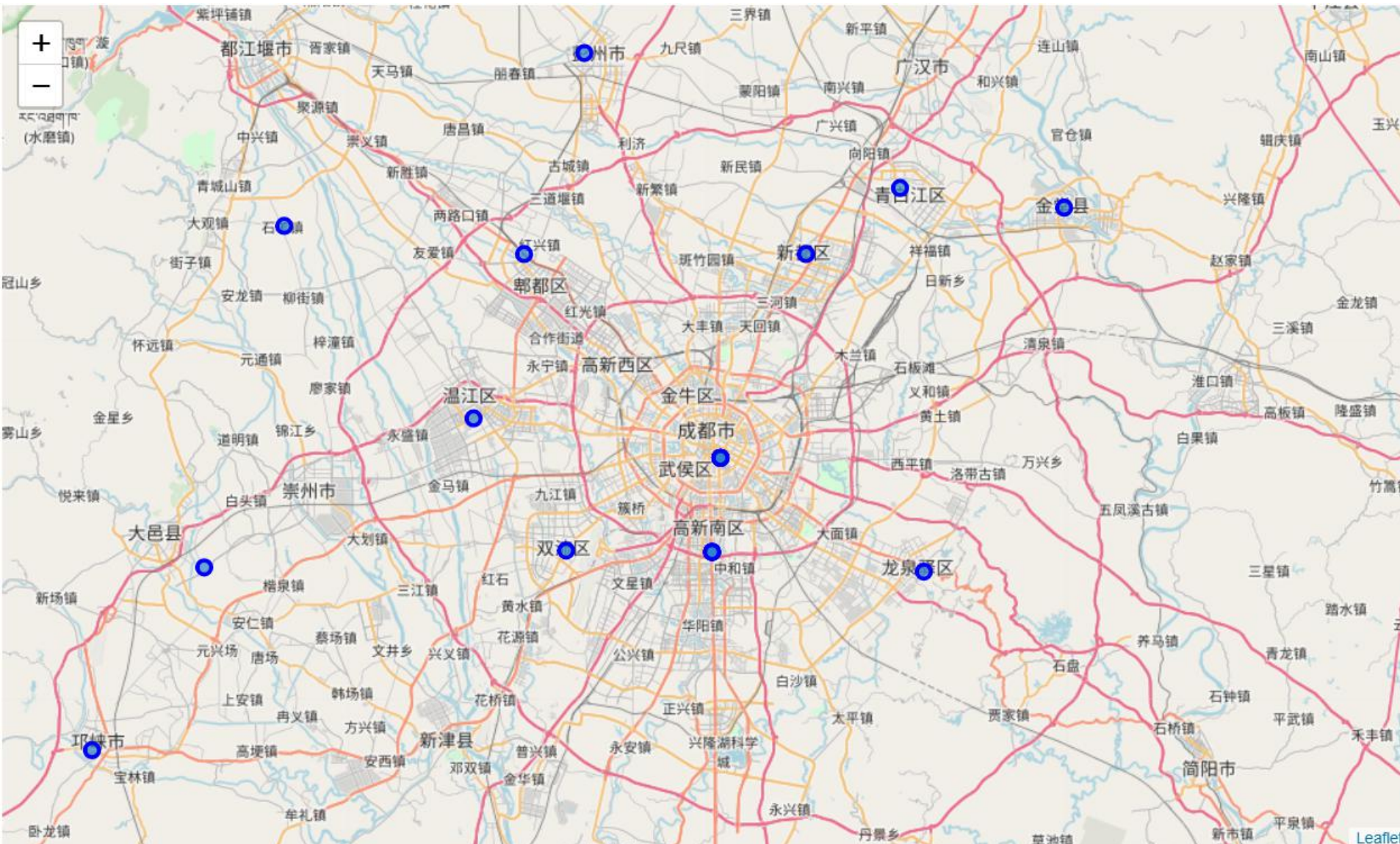
- Names and categories of the universities in different divisions, with their geographical coordinates (data to be extracted using the Foursquare API)
- Names and categories of the office areas in different divisions, with their geographical coordinates (data to be extracted using the Foursquare API)

# Methodology

Considering the contribution of different venues to the seccess of a bakery, a weight has been defined as follows:

- The already established bakeries have been weighted with -1, since we want to avoid concurrence.
- The universities have been weighted with 1, since students are good potential customers.
- The office areas have been weighted with 1.5, since employees are even better potential customers.

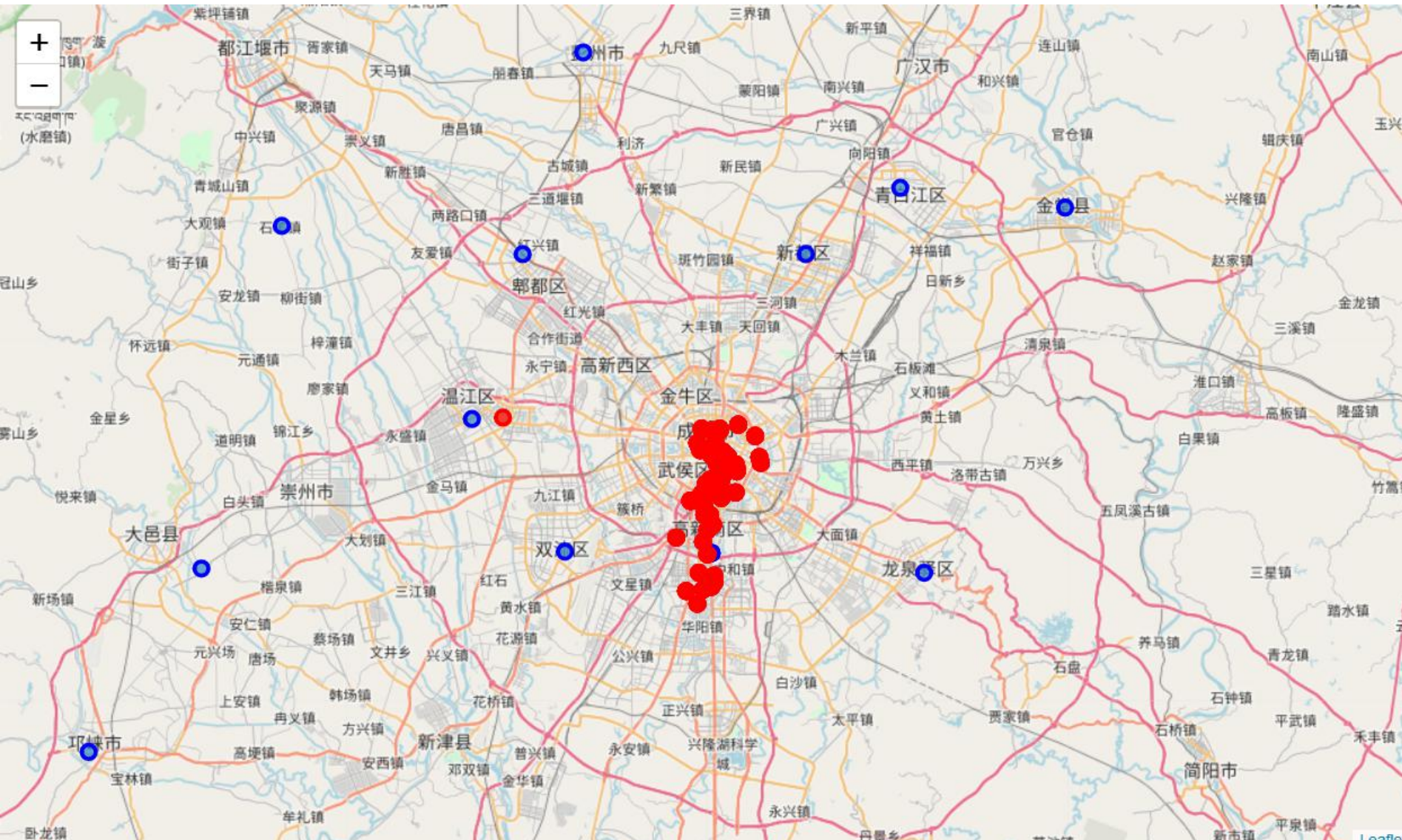
# Explore the Divisions in Chengdu



The map of Chengdu with the distribution of different divisions shown as blue dots.



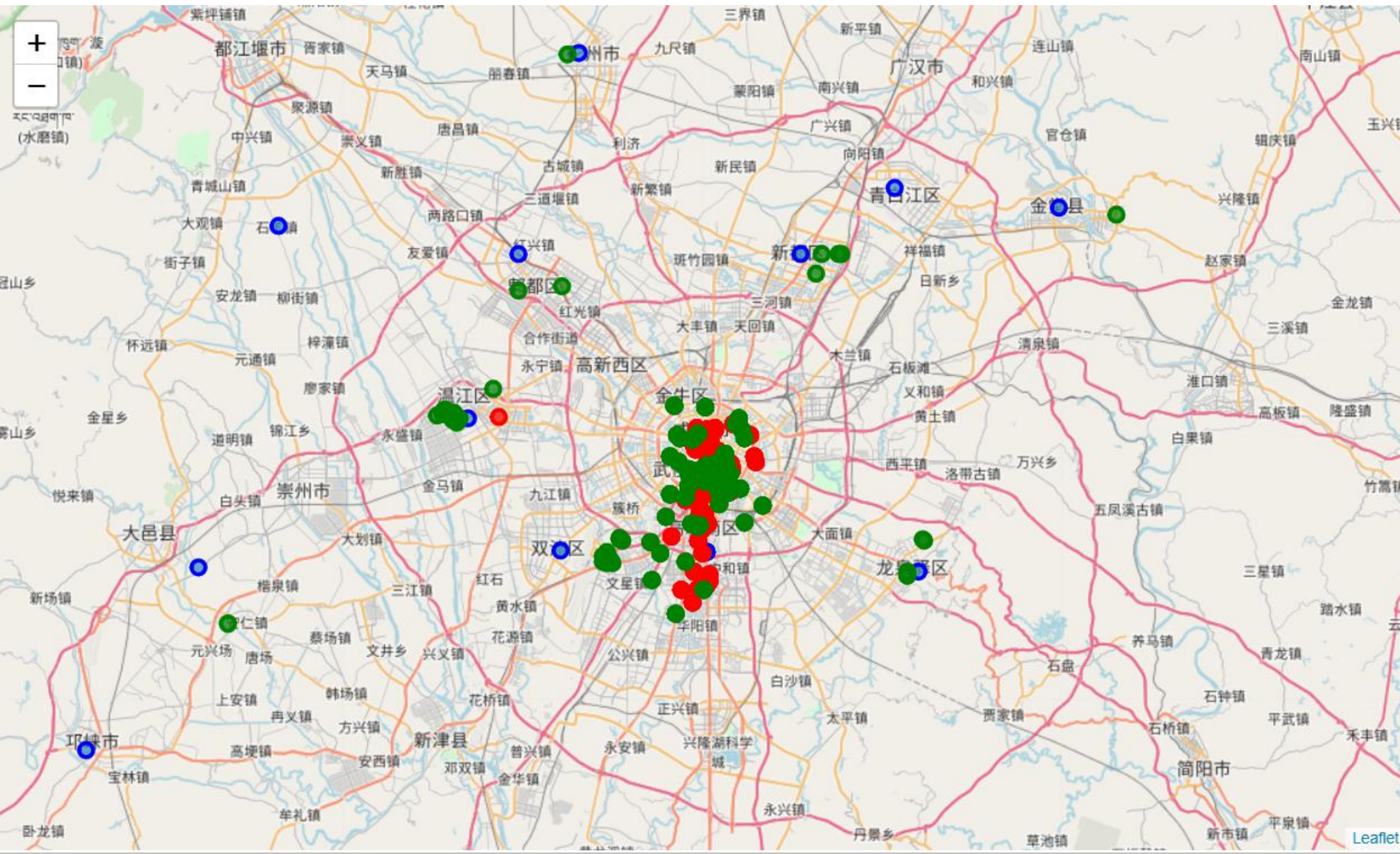
# Explore the Divisions in Chengdu



Add the distribution of already established bakeries in different divisions shown as red dots on the map.



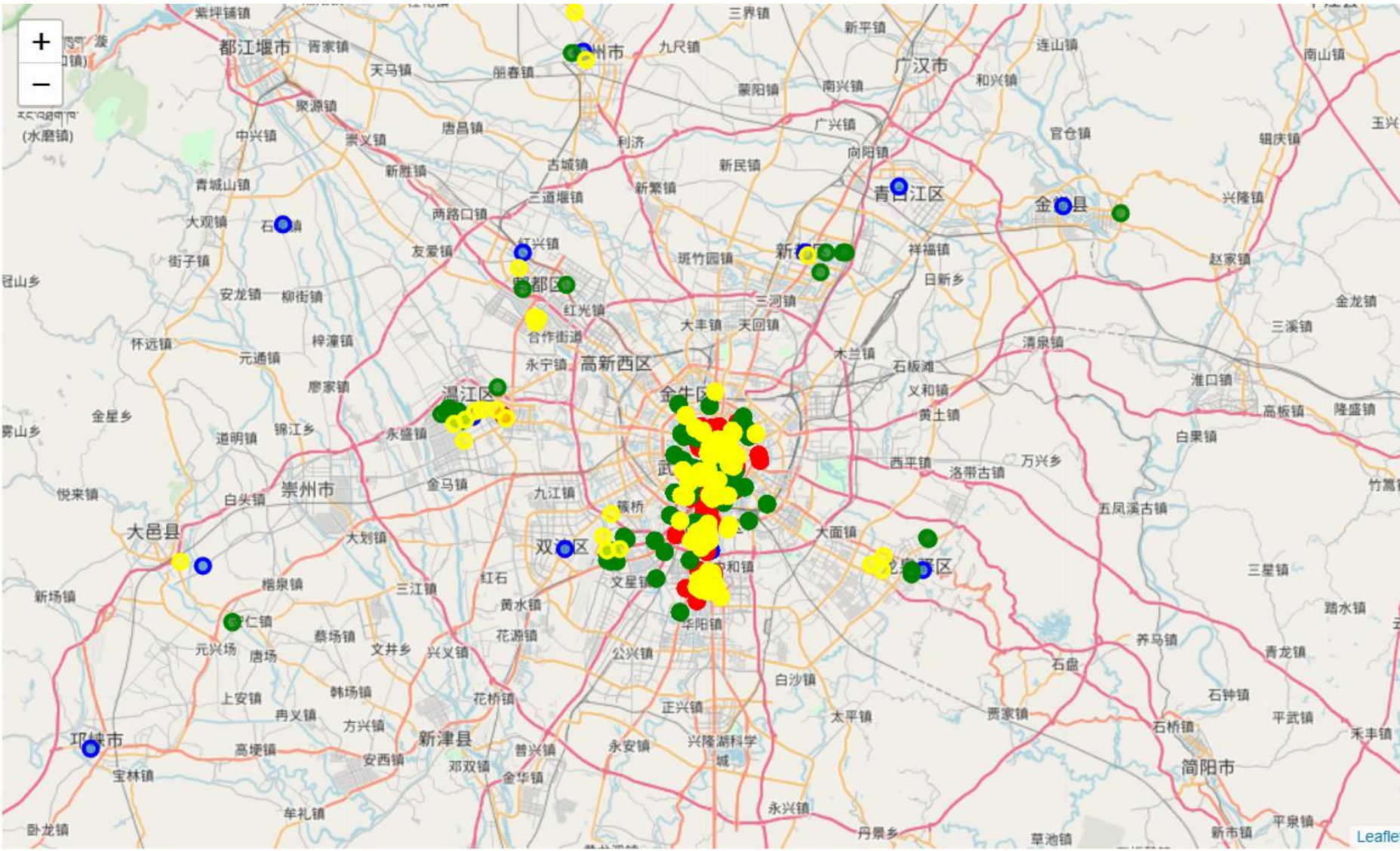
# Explore the Divisions in Chengdu



Add the distribution of universities in different divisions shown as green dots on the map.



# Explore the Divisions in Chengdu



Add the distribution of office areas in different divisions shown as yellow dots on the map.



# Determine the Optimum Location

Finally, scores have been computed for all divisions as the weighted sum of the number of venues in each of the 3 categories (bakeries, universities and office areas).

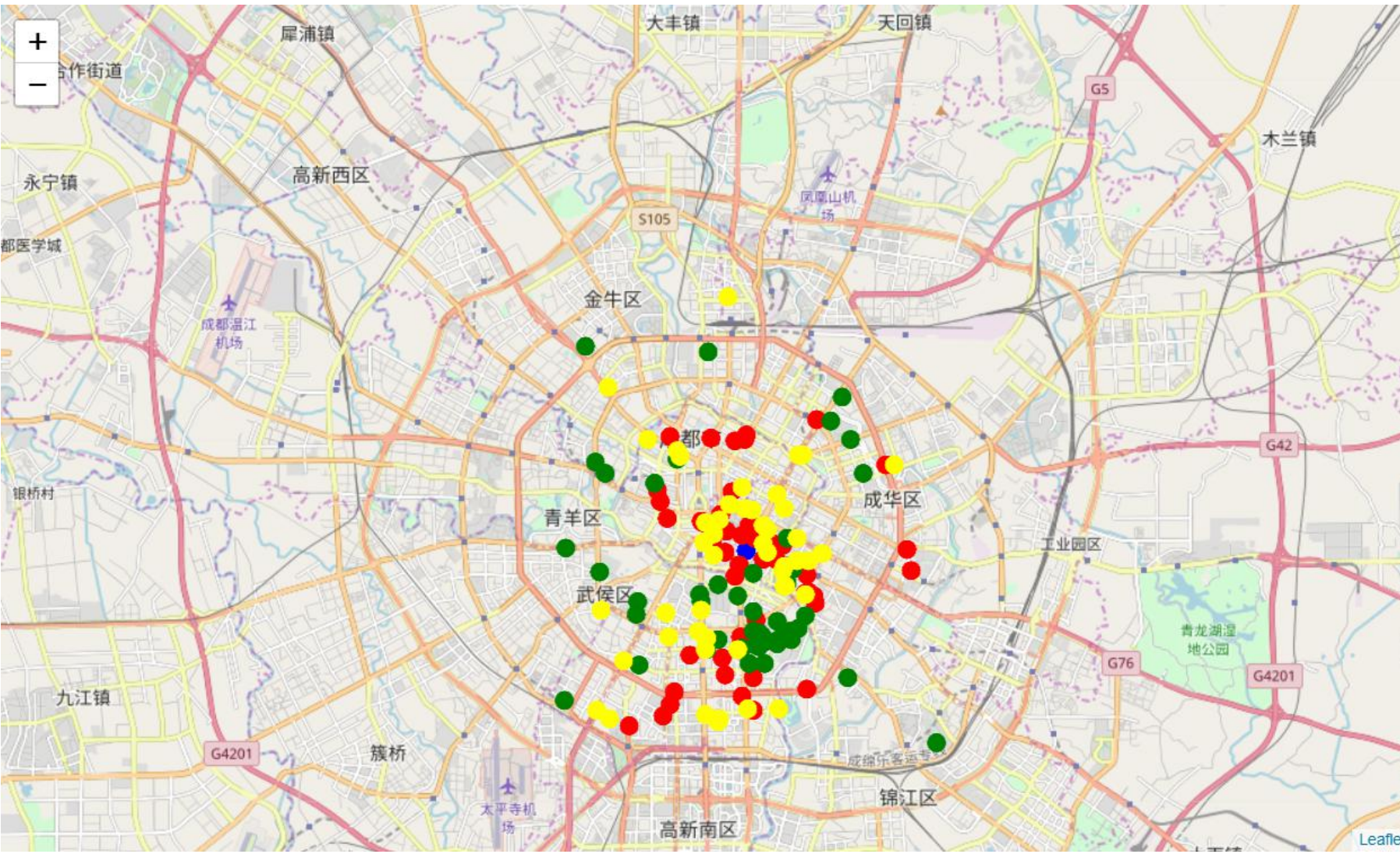
Divisioncode	Division	Score
510100	Chengdu	75.0
510104	Jinjiang	75.0
510105	Qingyang	75.0
510106	Jinniu	75.0
510107	Wuhou	75.0
510108	Chenghua	75.0
510132	Xinjin Co.	68.0
510131	Pujiang Co.	68.0
510129	Dayi Co.	68.0
510185	Jianyang	68.0
510116	Shuangliu	27.0
510115	Wenjiang	22.5

510117	Pidu	8.0
510114	Xindu	5.5
510182	Pengzhou	4.0
510184	Chongzhou	2.5
510121	Jintang Co.	1.0
510113	Qingbaijiang	0.0
510181	Dujiangyan	0.0
510183	Qionglai	0.0

# Discussions

- ▶ If there are a lot of bakeries in some division, it is probably because it exists demand in this area.
- ▶ However, the market can also be saturated. Therefore, we must ensure that there are not already too many bakeries in the same division.
- ▶ We also need to be sure that there will be enough customers for the bakery, so we choose locations close to universities and office areas.
- ▶ Based on our approach and analysis, divisions "Chengdu, Jinjiang, Qingyang, Jinniu, Wuhou and Chenghua", which have the same postcode and are all in the city center, are the best divisions to open a bakery.

# Conclusions



**The city center is the best location to open a new bakery.**

- ▶ Red dot — already established bakeries
- ▶ Green dot — universities
- ▶ Yellow dot — Office areas
- ▶ Blue dot — the best locate for a new bakery





# THANK YOU!

TINGTING ZHANG  
DATA SCIENCE STUDENT

[zhangtingting0323@gmail.com](mailto:zhangtingting0323@gmail.com)