Programming tools : Creating a Shiny App to find an appartment in Lausanne

Arnaud Bertrand, Meriem Ben Mustapha, Alexandre Gautschi, Lawrence Jesudasan, Fabien Calderini

University of Lausanne

2023-12-21

1. Introduction and Objectives
2. Webscrapping
3. R Package creation
4. Shiny App
5. Shiny App live demo
6. Limitations and possible improvements

Section 1

Introduction and Objectives

Objectives

- Use of Rmarkdown
- Use of GitHub as a collaborative tool to work on a R project
- Web scrapping using rvest
- Exploratory Data Analysis and functions creation
- Build a Shiny app to share results in an interactive way
- Construction of a R-package

Project description

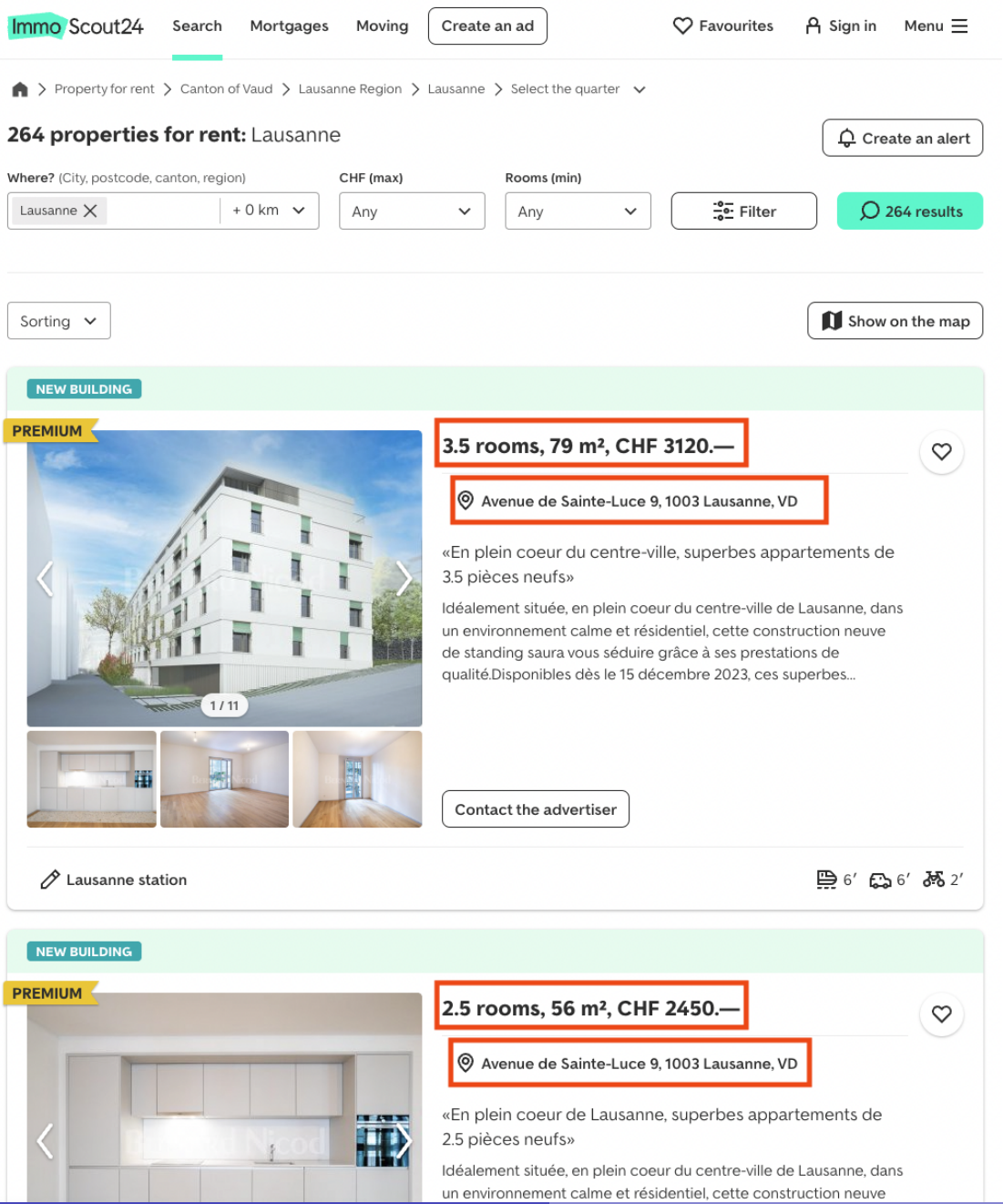
Building a tool to help students and others to have an easy and fast access to an overview of rent prices in Lausanne depending to their need of number of rooms and location.

- Project steps :
  - Web scrapping to get data
  - Create functions for EDA and visualization
  - Create a shiny app
  - Create a R-package
- Source of data: Immoscout.ch

Section 2

Webscrapping

Immoscout website



Section 3

R Package creation

Package functions

- estimate_price: A multiple linear regression function trained on the offers on Immoscout website that take a *number of rooms*, the *surface* and a *postal code* as variables and return an estimated rent price
- Nearest_neighbors function: Return similar properties in terms of rooms, square meters, and location, helping in property comparison and recommendation
- launch_shiny_app: A function to facilitate the launch of the shiny app by specifying the path to the Shiny app directory within the **immoswiss** package

Section 4

Shiny App

Rent price estimation

~/Documents/GitHub/Project-Group-B - Shiny

http://127.0.0.1:5622 | Open in Browser | Publish

Lausanne - Real Estate Market Analysis | Estimate the price | Explore your option

Select the postal code of your proprety:

1003

Number of rooms:

3

Square Meter:

80

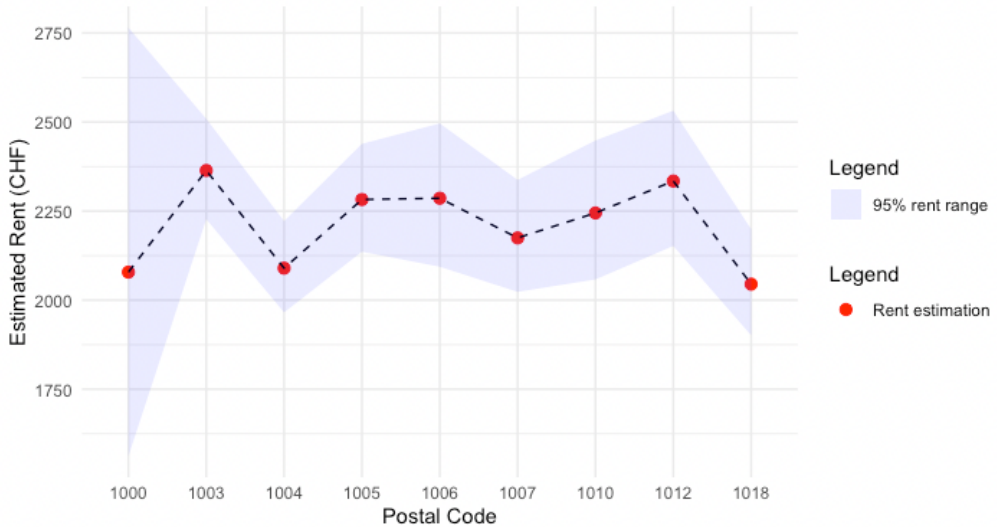
Calculate the estimated rent of your housing

Results:

The estimated rent of your desired house/flat is: **2363.978** CHF.

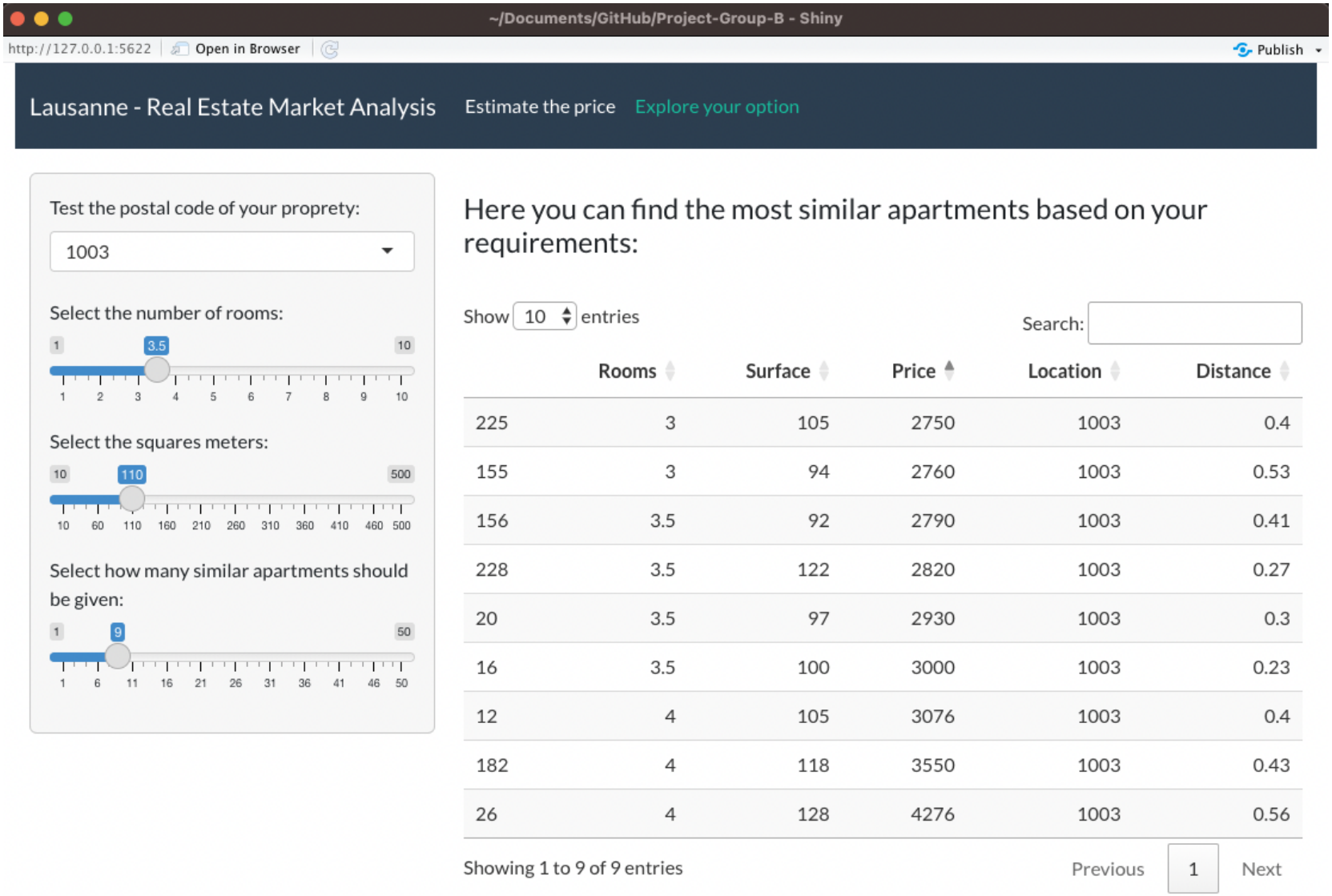
This estimation ranges from **2227.502** CHF to **2508.816** CHF.

Below you will find the change in rent per location for your desired house features
You can click on any point to get rent details.



Location	Estimate	Lower	Upper
1003	2363.98	2227.50	2508.82

Finding the most similar appartments



Section 5

Shiny App live demo

Section 6

Limitations and possible improvements

Conclusion

We have successfully built a R package and a shiny app to display rent estimates and similar offers in Lausanne according to user input, thanks to web scrapping, creating functions to analyse the data and GitHub to work in a group on this project.

Limitations:

- Only one city with limited number of rent offers
- Any changes made to Immoscout website could break the webscrapping function

Possible improvements:

- Adding other cities -> could also improve the model estimates
- Adding new website sources to get more data
- Adding a direct link to the rent offer