

Programming tools : Creating a Shiny App to find an apartment 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

Immo Scout24 Search Mortgages Moving Create an ad Favourites Sign in Menu

Property for rent Canton of Vaud Lausanne Region Lausanne Select the quarter

264 properties for rent: Lausanne

Create an alert

Where? (City, postcode, canton, region)

Lausanne X

+ 0 km

CHF (max)

Any

Rooms (min)

Any

Filter

264 results

Sorting

Show on the map

NEW BUILDING

PREMIUM



1 / 11



3.5 rooms, 79 m², CHF 3120.—

Avenue de Sainte-Luce 9, 1003 Lausanne, VD

«En plein cœur du centre-ville, superbes appartements de 3.5 pièces neufs»

Idéalement située, en plein cœur du centre-ville de Lausanne, dans un environnement calme et résidentiel, cette construction neuve de standing saura vous séduire grâce à ses prestations de qualité. Disponibles dès le 15 décembre 2023, ces superbes...

Contact the advertiser

Lausanne station

6' 6' 6' 2'

NEW BUILDING

PREMIUM



2.5 rooms, 56 m², CHF 2450.—

Avenue de Sainte-Luce 9, 1003 Lausanne, VD

«En plein cœur de Lausanne, superbes appartements de 2.5 pièces neufs»

Idéalement située, en plein cœur du centre-ville de Lausanne, dans un environnement calme et résidentiel, cette construction neuve

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

Lausanne - Real Estate Market Analysis [Estimate the price](#) Explore your option

Select the postal code of your property:

1003

Number of rooms:

3

Square Meter:

80

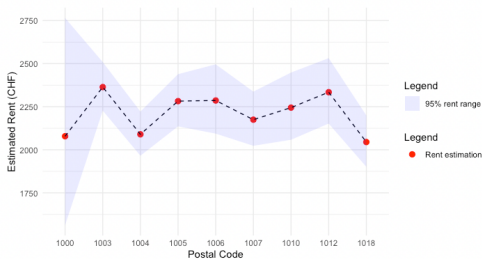
Calculate the estimated rent of your housing

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 apartments

http://127.0.0.1:5622

Open in Browser

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

Publish

Lausanne - Real Estate Market Analysis

Estimate the price

Explore your option

Test the postal code of your property:

1003

Select the number of rooms:

1 3.5 10

Select the squares meters:

10 110 500

Select how many similar apartments should be given:

1 9 50

Here you can find the most similar apartments based on your requirements:

Show 10 entries

Search:

	Rooms	Surface	Price	Location	Distance
225	3	105	2750	1003	0.4
155	3	94	2760	1003	0.53
156	3.5	92	2790	1003	0.41
228	3.5	122	2820	1003	0.27
20	3.5	97	2930	1003	0.3
16	3.5	100	3000	1003	0.23
12	4	105	3076	1003	0.4
182	4	118	3550	1003	0.43
26	4	128	4276	1003	0.56

Showing 1 to 9 of 9 entries

Previous 1 Next

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