DETECTREE
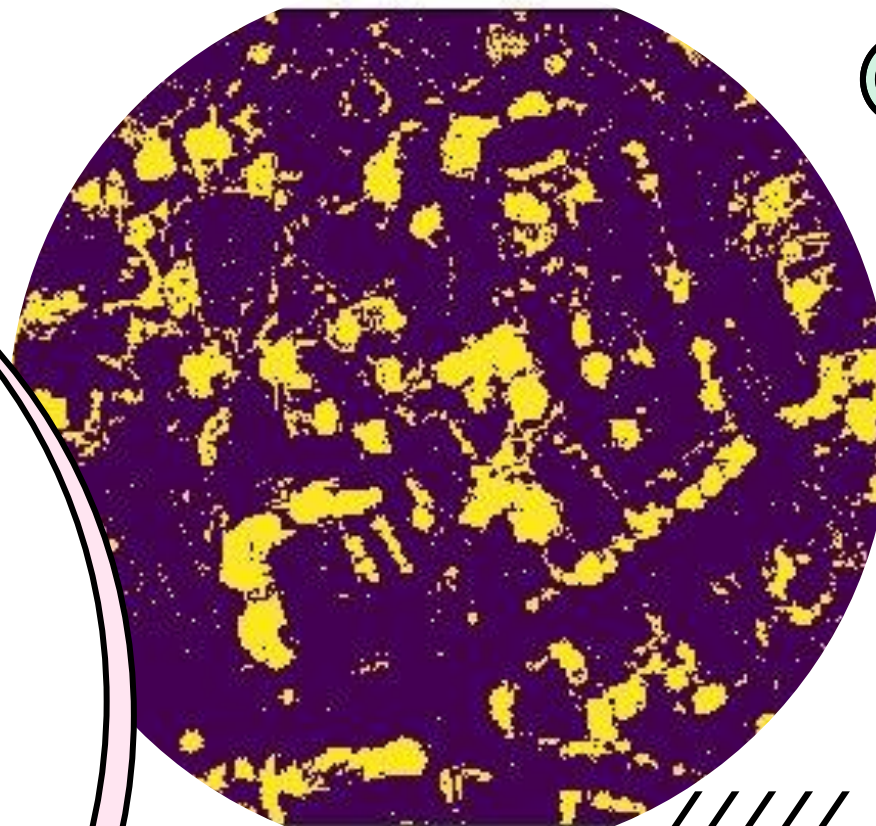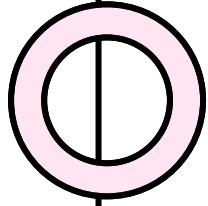
DISC DATA LAB

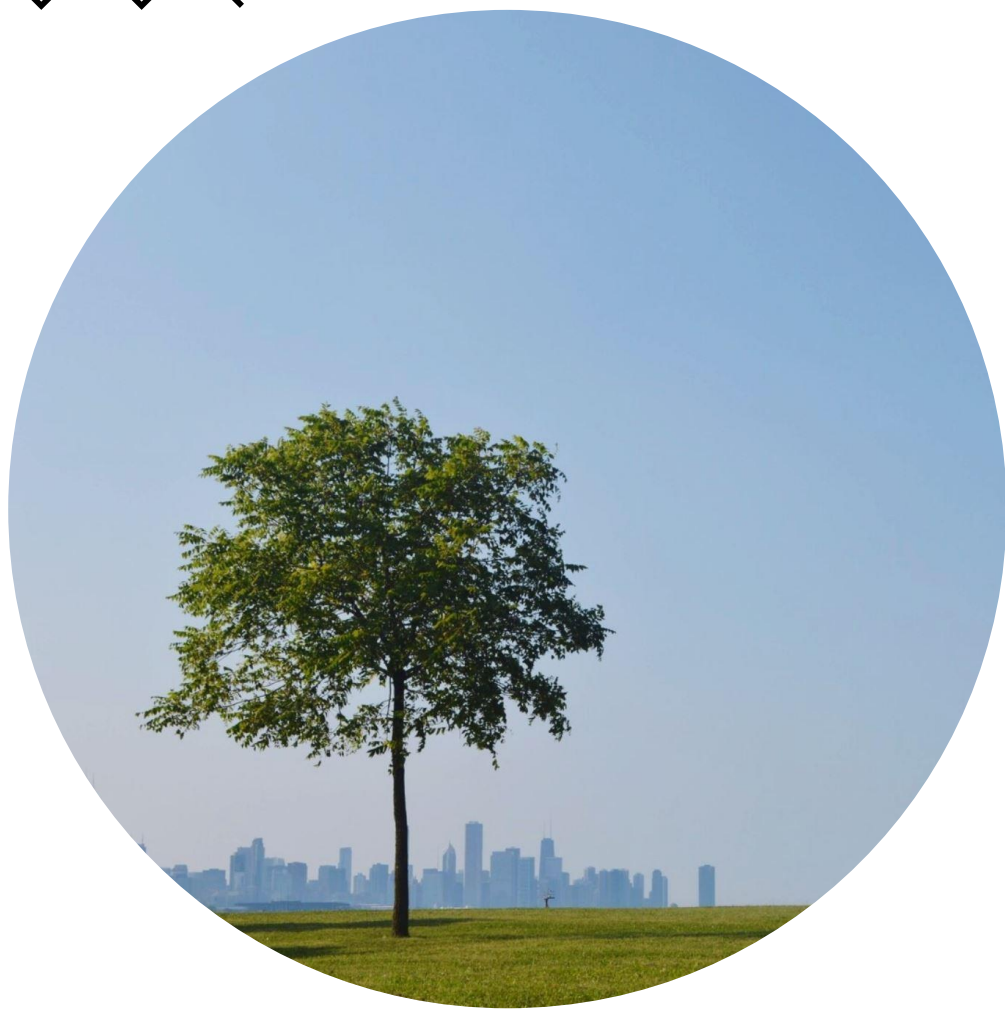LUCIE, VINCENT, BENJAMIN

Our Goal

Analyze satellite images from different cities to obtain the tree share

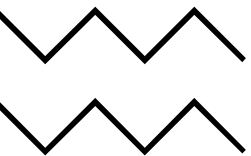Match this variable to different life factors (environment, satisfaction, health, …)

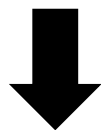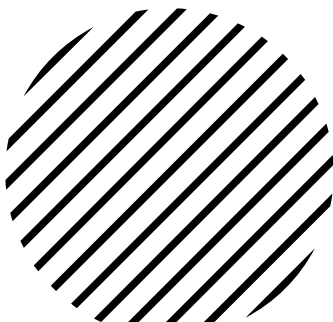Correlation between variables and importance of trees in cities

The importance of tree coverage

- In cities as an environmental factor
- The satisfaction and well-being of residents
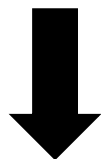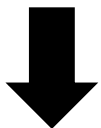- Provides biodiversity and ecological quality
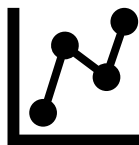
Data Flow

mapbox

↓ API

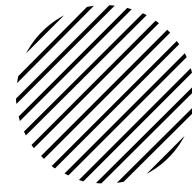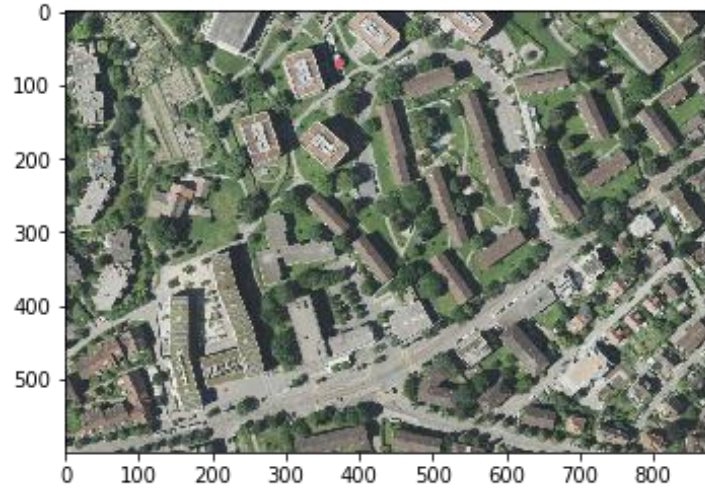Detectree 🌳   Functions called →But own workflow adapted to our needs

↓ Classification and evaluation of tree coverage in Python

⬛ (database)

↓ Data Analysis
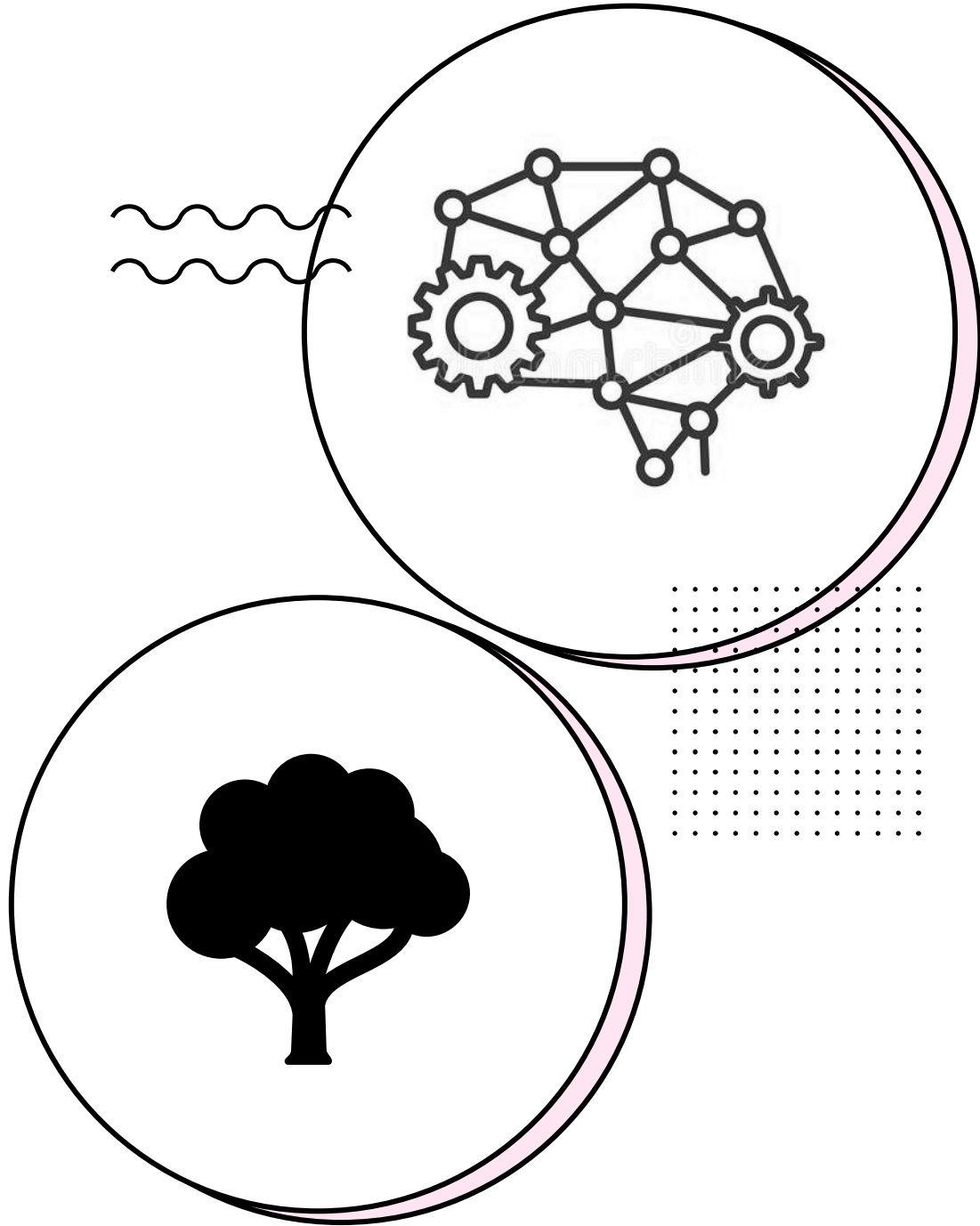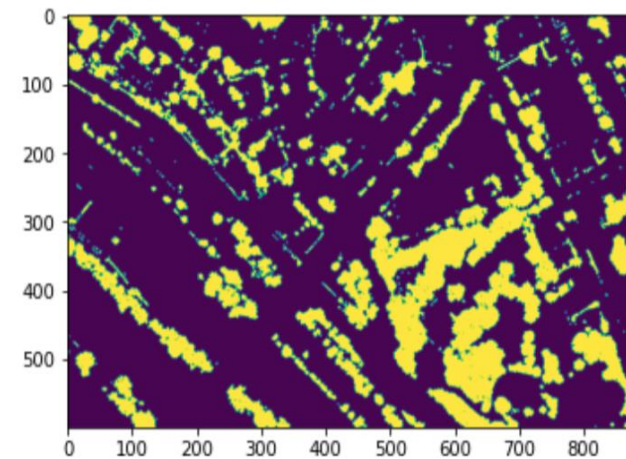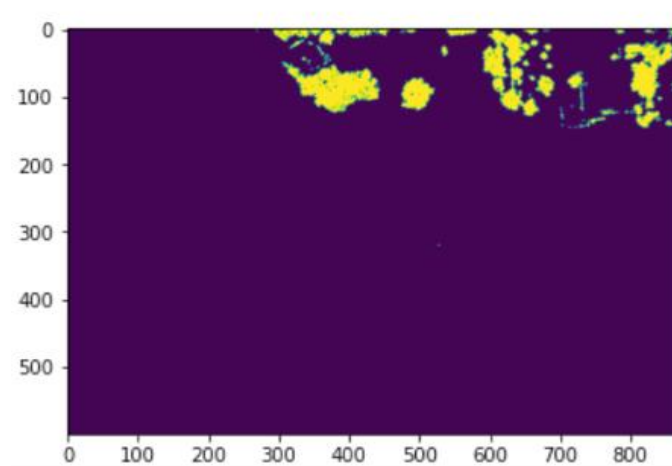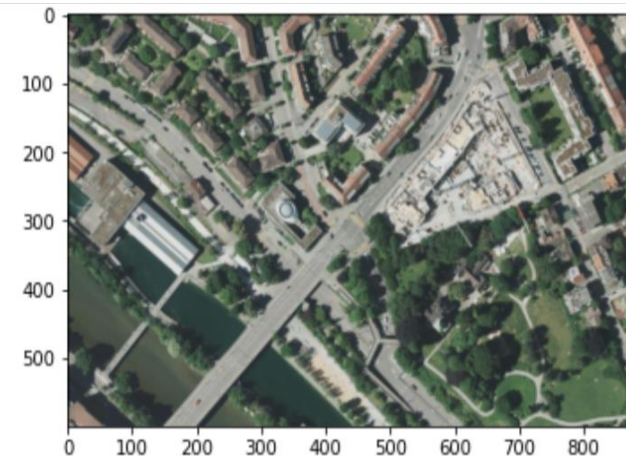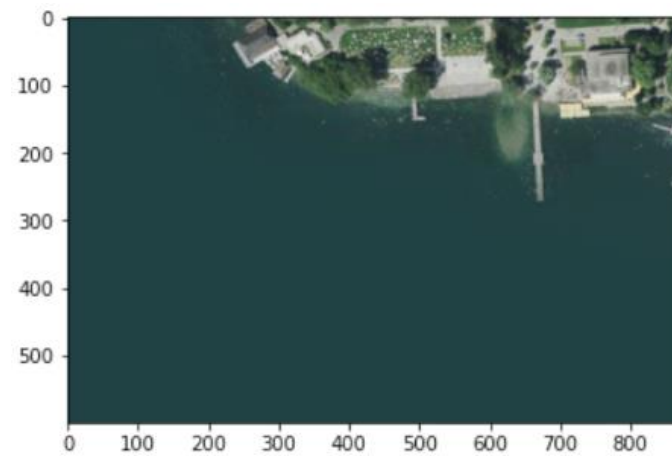
📈 (chart)

- Select the desired area
- Retrieve the satellite images via the Mapbox API
- Download the individual tiles
- Store the tiles

Detectree

- Supervised learning problem
- System must be trained on suitable data
- The tiles selected for training must be linked to the ground truth of the tree/non-tree masks
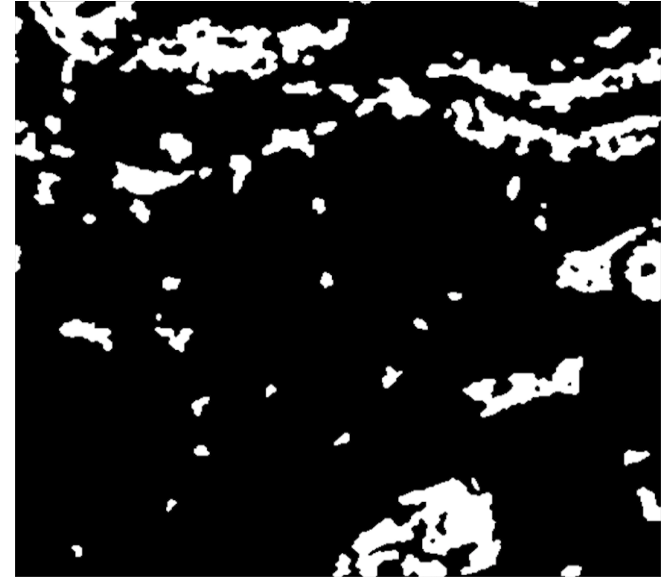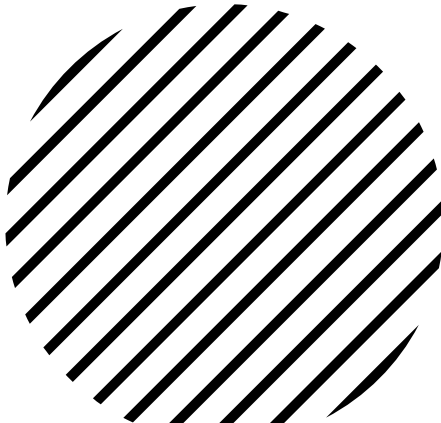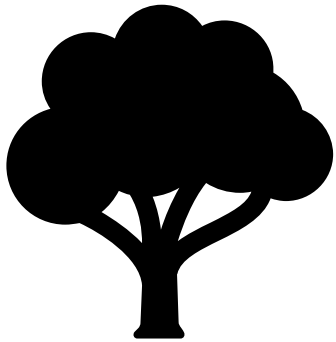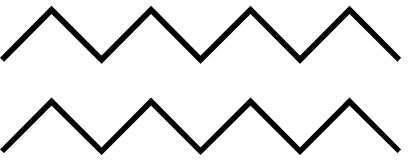
Detectree

Detectree

- Training of classifiers
- Classifiers can be used to distinguish tree-like and non-tree-like pixels
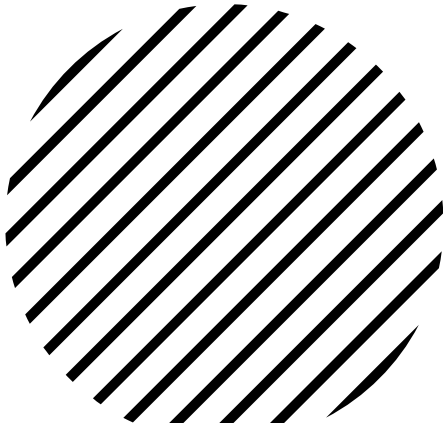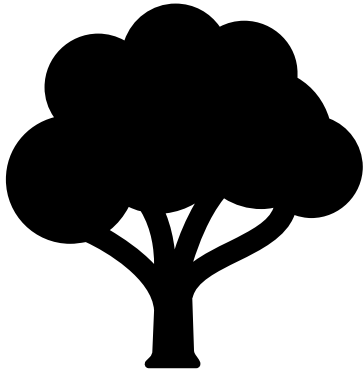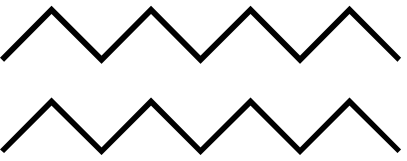
Detectree

Incorrect classifications:

- Poor resolution
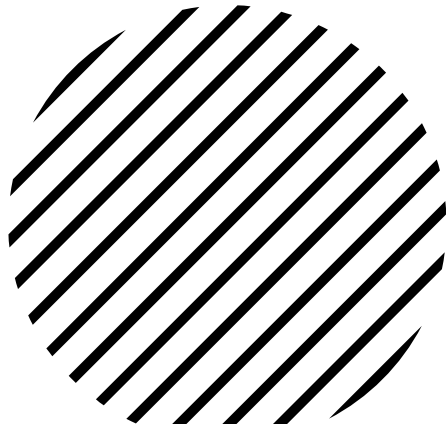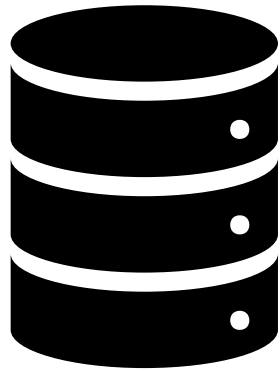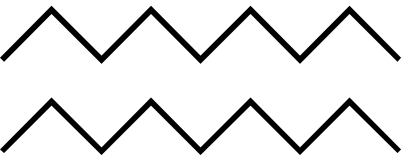- Photos are not recorded vertically from above

Detectree

- Classification of tree-like and non-tree-like pixel for each tile
- Determine the proportion of predicted tree-like and non-tree-like pixels for each tile
- The accuracy is determined by comparison with manually created ground truth masks.
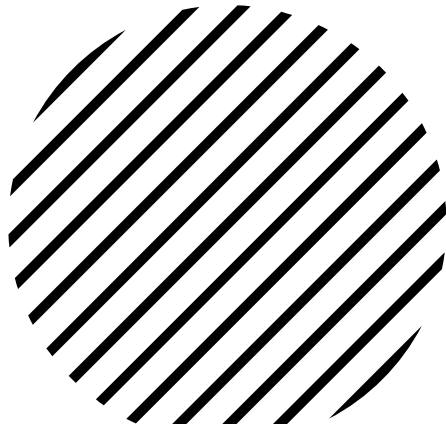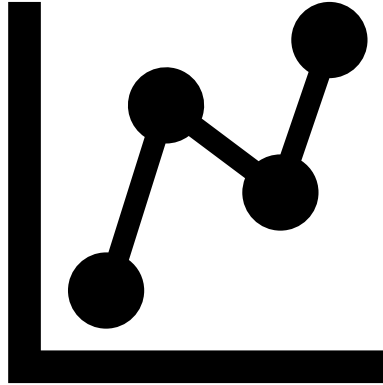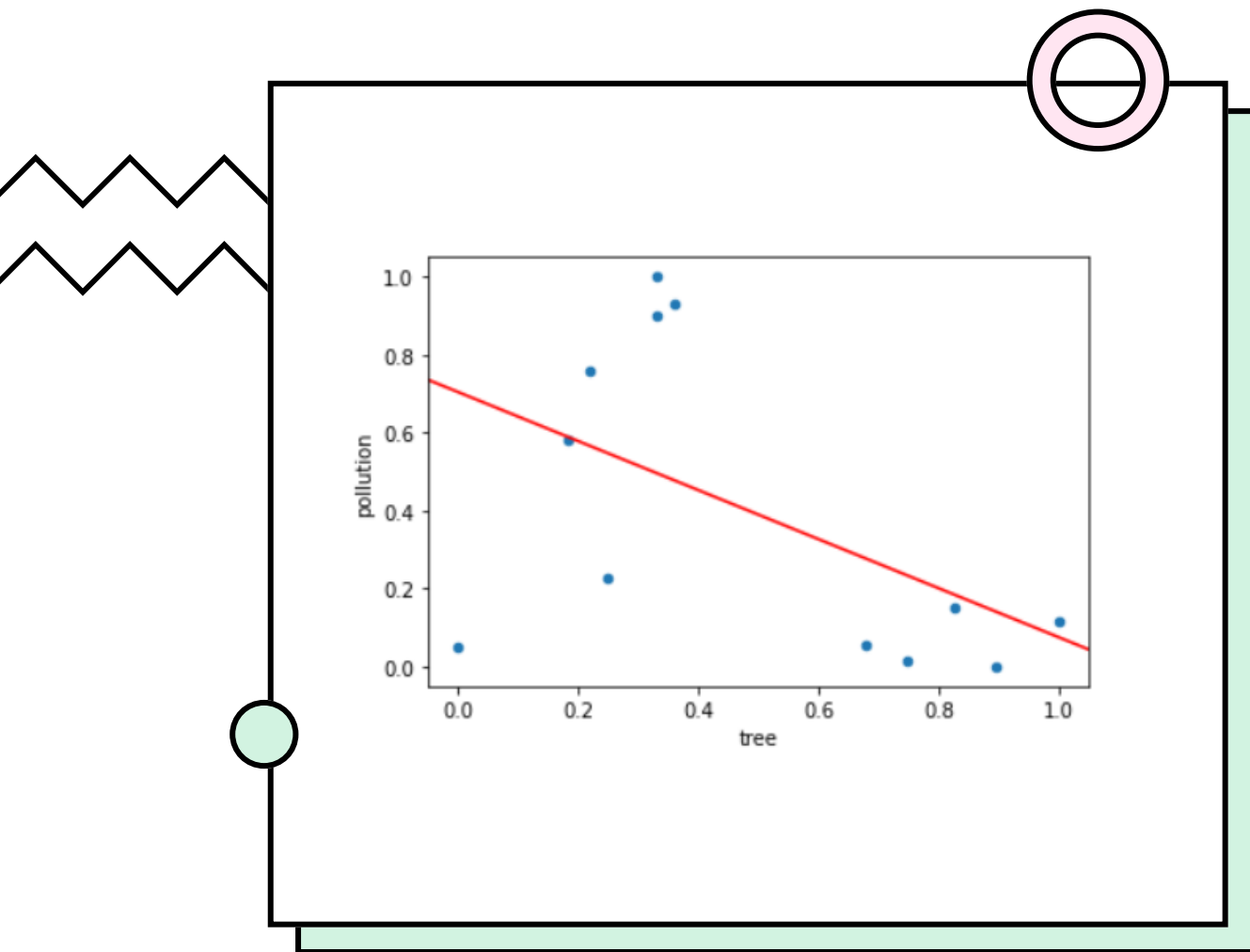
Detectree

Data processing

- Folder for each city with raw and predicted tiles
- Overall accuracy of 75%
- Percentage of tree coverage
- Secondary data from different cities with life satisfaction and environment indices
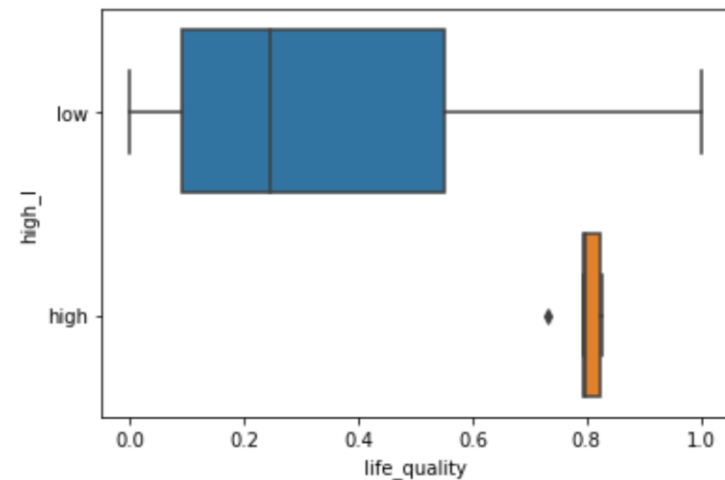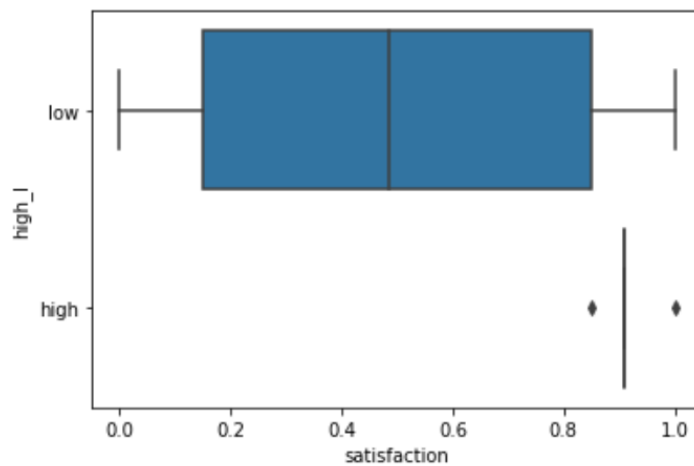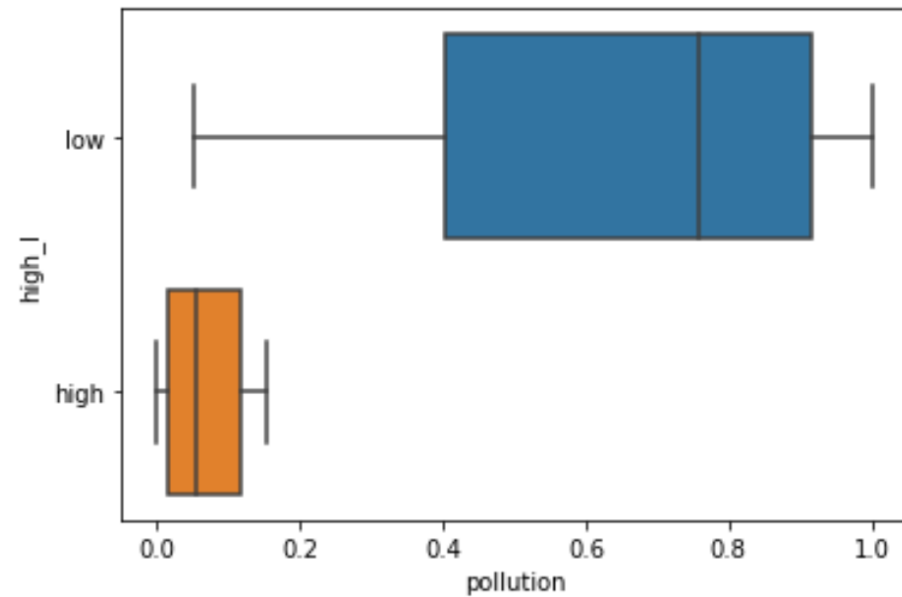
Data Analysis

- Analysis 1 with detectree data (12 samples)
- Boxplots
- Linear Regression Modell
- correlation matrix

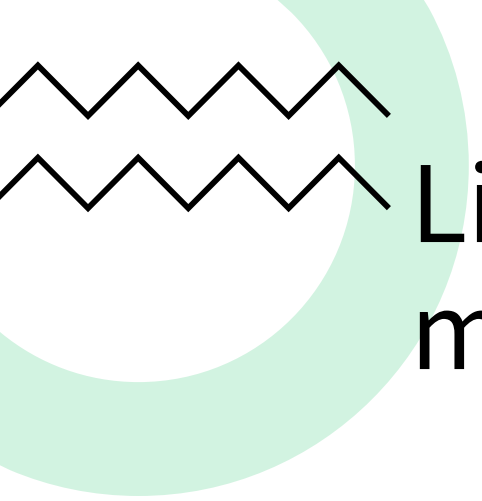- Analysis 2 with European environment agency data (78 samples)
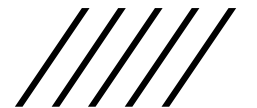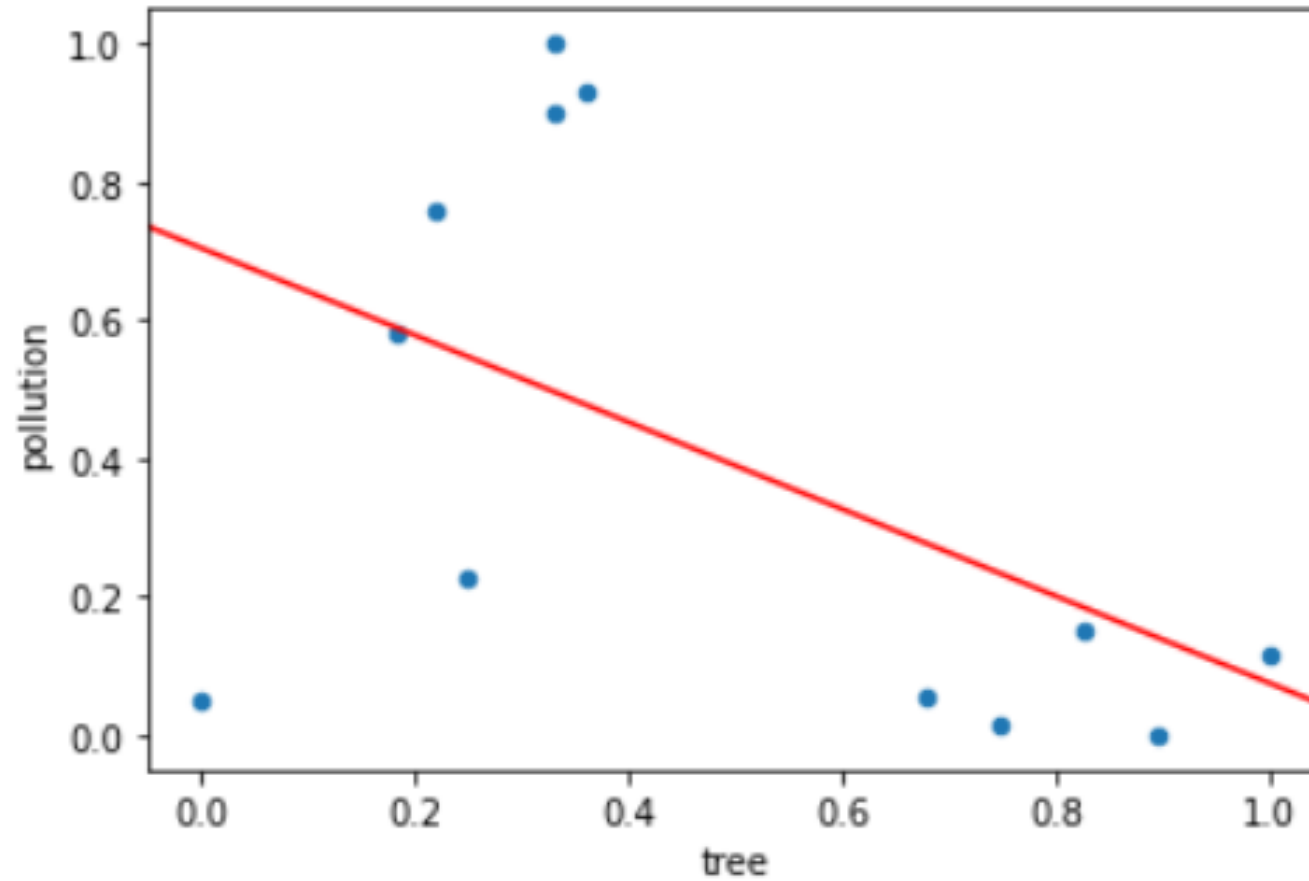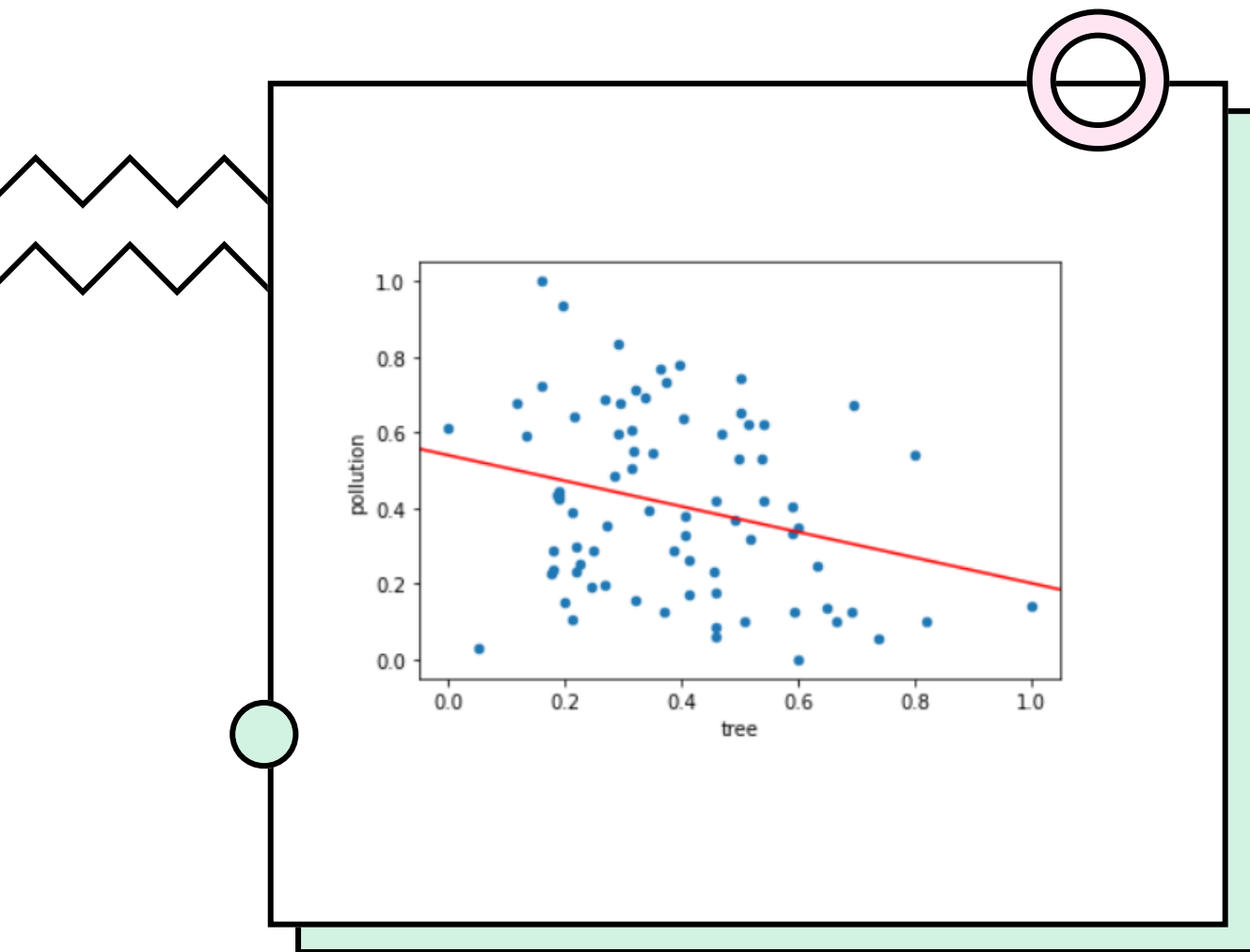
DATA ANALYSIS 1

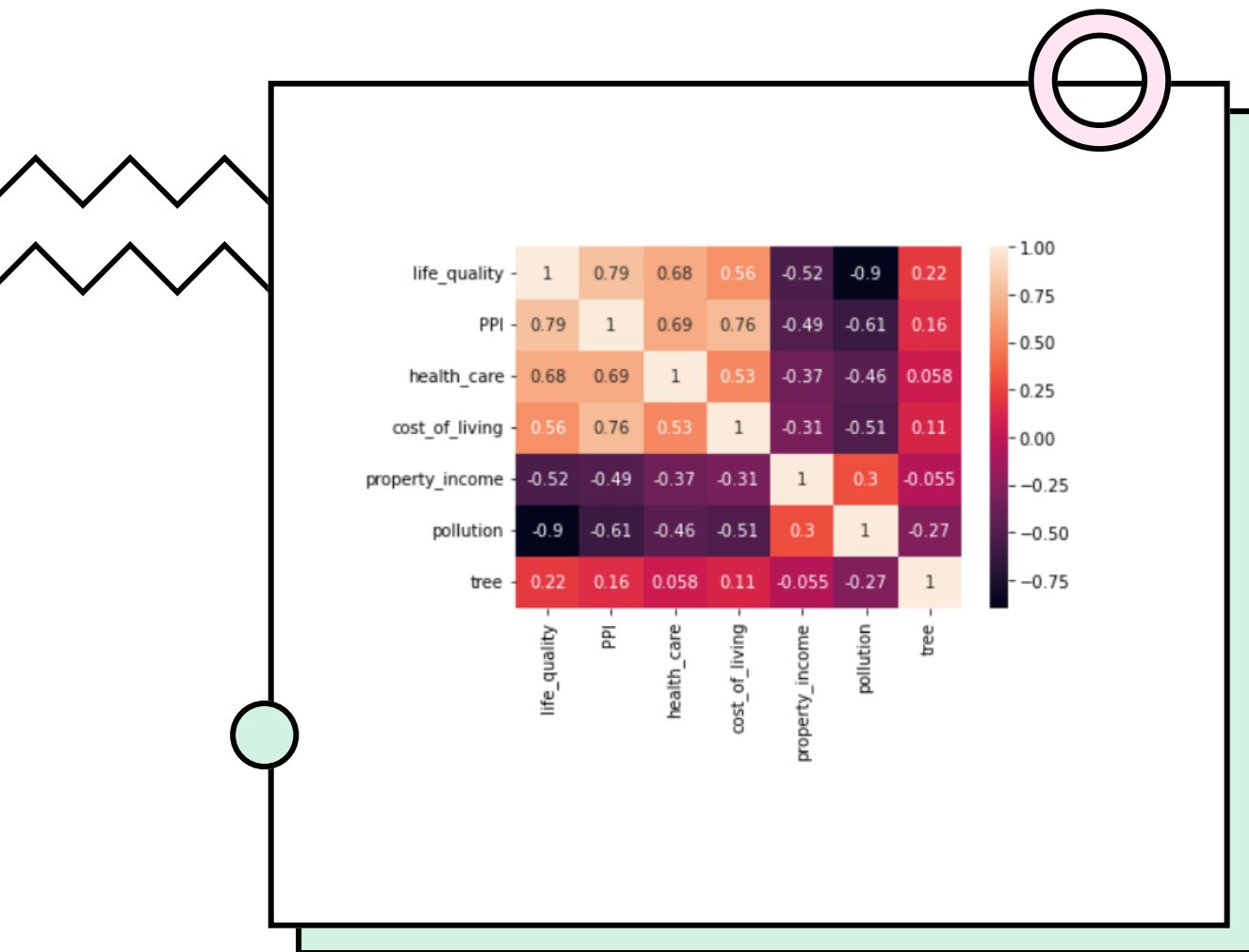**BOXPLOTS: HIGH VS. LOW TREE SHARE**

DATA
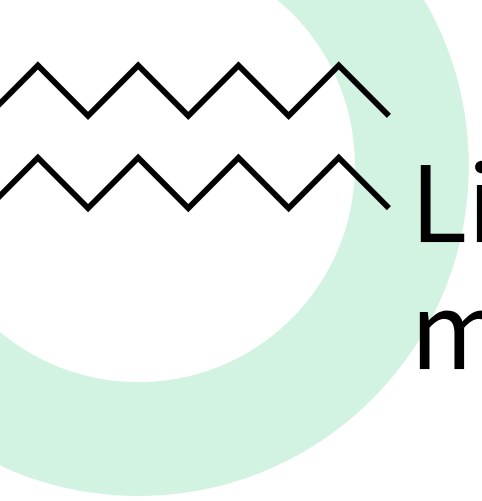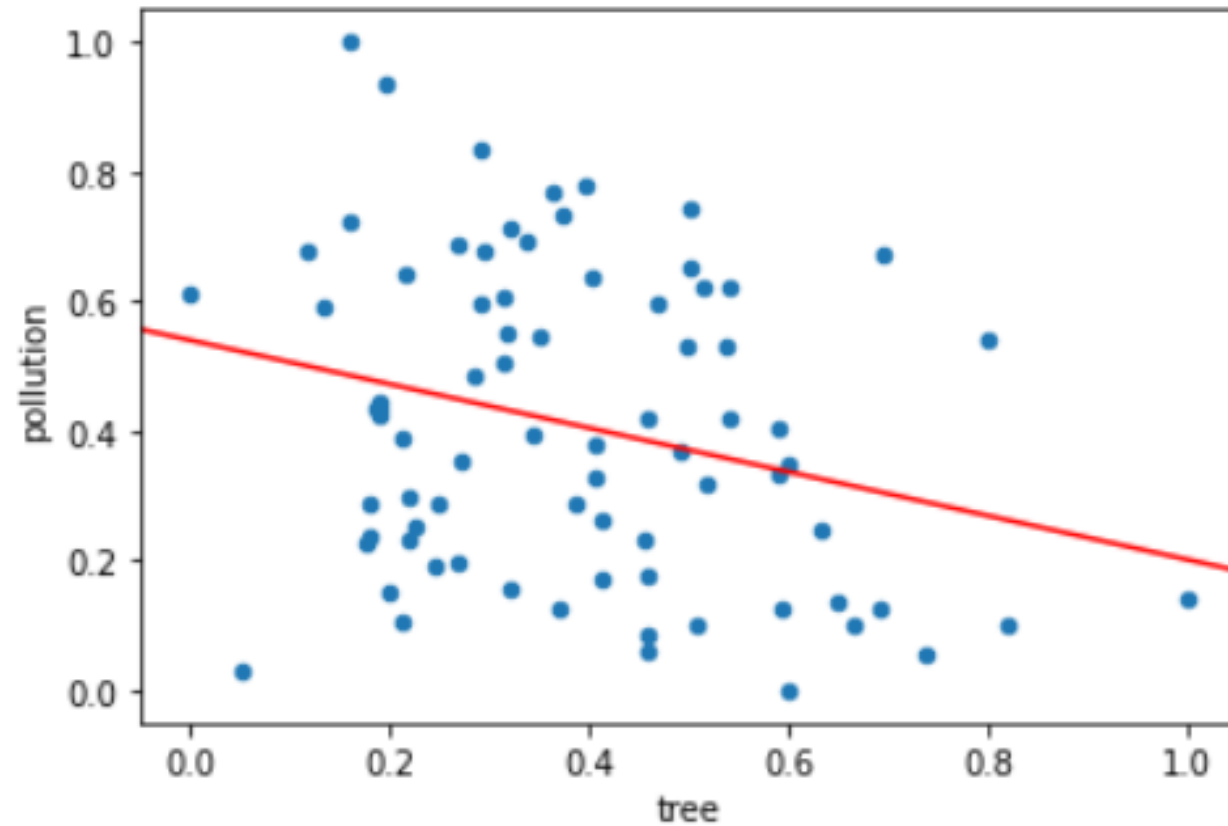ANALYSIS
1

Linear Regression model

DATA ANALYSIS 2

DATA ANALYSIS 2

Linear Regression model

Conclusion

- Positive social influence on various life quality factors
- Trees reduce air pollution
- Data-driven analysis of environmental and social effects will be necessary to guide the future market

COME ON PLANT A TREE FOR YOUR COMPANY!