



BioProtect

# BioProtect PPGIS Analyser

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Solution description

UiT



## Summary

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Public Participation Geographical Information System (PPGIS) is a method that engages and mobilises citizens in decision-making processes, while delivering spatial information and knowledge of high enough quality for conservation and planning purposes.

BioProtect will develop a first version of an interactive web application, called the BioProtect PPGIS Analyser, visualising digital citizen mapping data. It will analyse and visualise spatial data from PPGIS tools about perceived threats and risks to coastal community areas. This user-friendly, web-hosted app will standardise procedures for assessing response biases and processing data to analyse the distribution of features mapped by the communities.

The app will include analytical tools such as heatmaps, DBSCAN clustering, Maxent, Bayesian additive regression trees, and digital text analysis tools like structural topic modelling, accounting for participant characteristics.

## What it provides

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The PPGIS analyser app will be a companion for decision makers and researchers along the data analysis process.

Typically, PPGIS surveys include spatial data (i.e., georeferenced points), demographic data, and survey data. The app will provide with exploratory analyses where e.g., demographic data is summarized to appropriately describe the participants and their socio-economic backgrounds. In this descriptive phase of background data, users will receive the demographic summary in a ready-to-use document (in a pdf format, or similar), ready to be taken further for validation of representativeness.

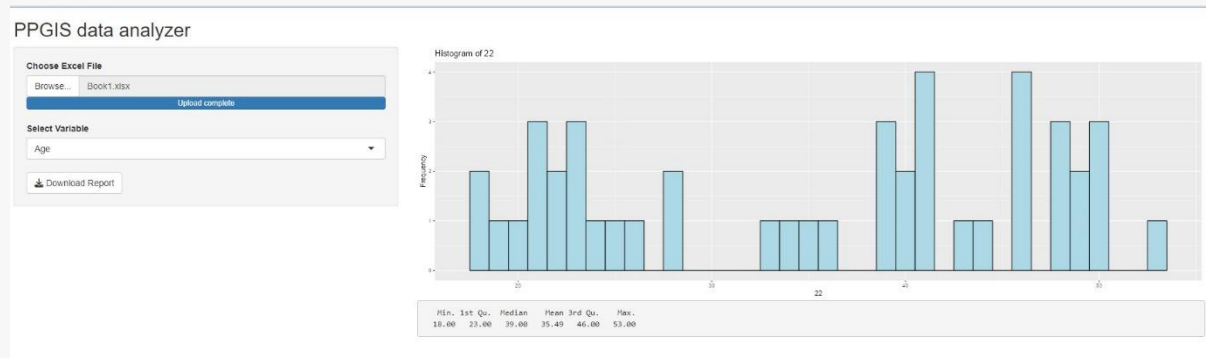
Other non-spatial data e.g., survey data will have the possibility to be analysed as Likert data, obtaining graphical representation of the answers given by respondents as well as consistency metrics such as the Cronbach's alpha that can help identify discordant answers within a survey.

For the PPGIS data i.e., the spatially explicit points, the app will provide with a description of the mapped points (frequency of points per category, and supplementary information to points), a graphical representation in a map, and basic modelling options through simplified models such as heatmaps to show where the point density is highest or clustering.

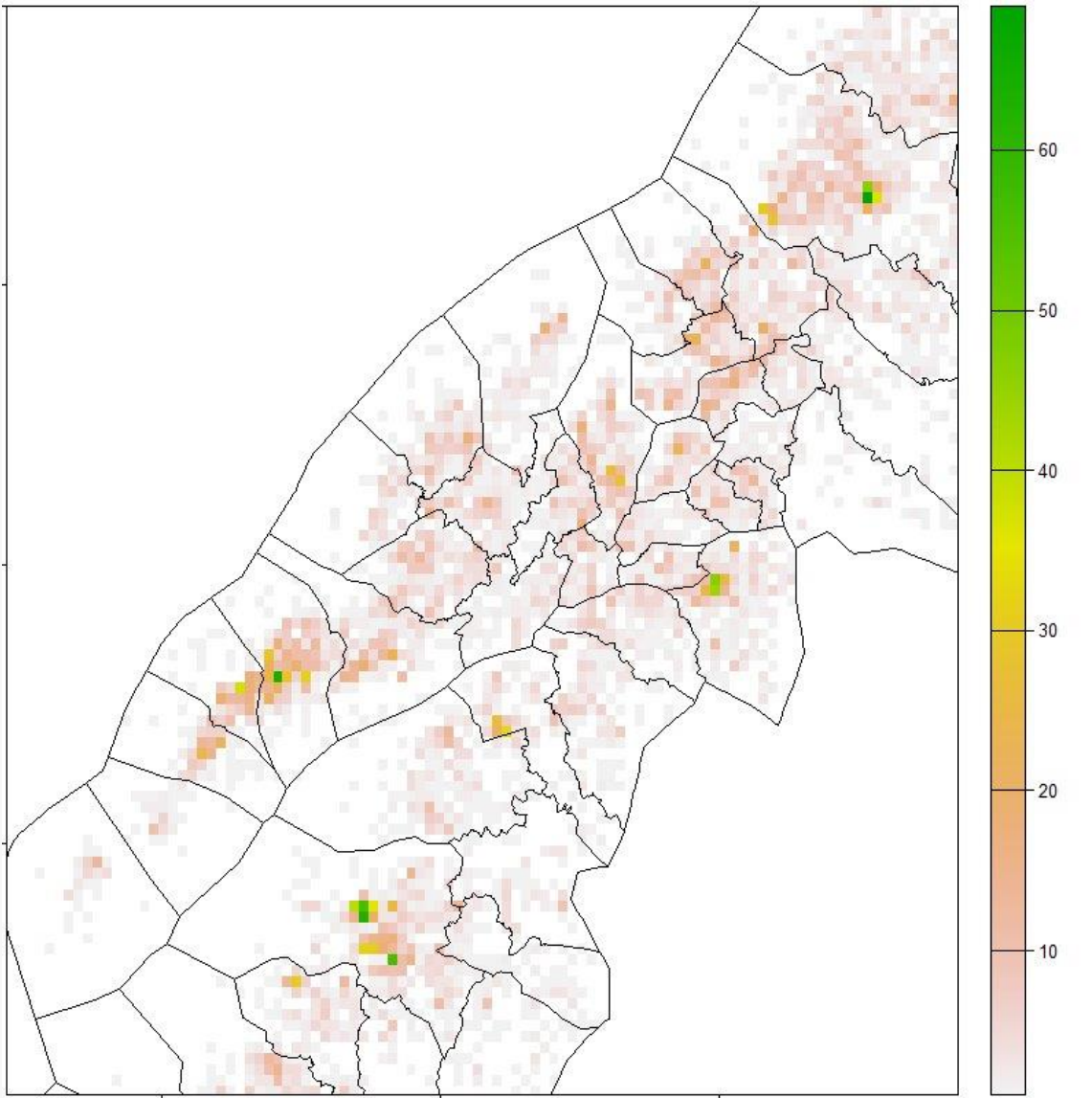
All the outputs of the app can be obtained in a pdf document, as well as the code required to achieve the results: providing the code is a way to facilitate further analyses or finer tuning of models/data wrangling for advanced users, or for users with curiosity to understand the step-by-step process to obtain the different results.

# How it is applied or should be used

The app simply requires the dataset to be imported into the program, with a specific datasheet for each step of the analyses: background data will be presented in an independent sheet to the questionnaire data, and the spatial data will be presented in an independent sheet too. Once the data is introduced to the app, the remaining steps will be done automatically with option to adjust some parameters when relevant.



**Figure 1.** Example of the output that the app will provide. In this case, the data sheet "Book1.xlsx" has been uploaded to the app and the variable of choice has been "Age". The app automatically shows the age distribution obtained in the survey, as well as the summary statistics. In addition, there is a button to download the report in a pdf format



**Figure 2.** Example output of that the app will provide. In this case, the app has calculated the number of points marked by respondents in a 1x1 km pixel size and shows their density with a colour scheme.



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