Your Nearest Care

By Tchalins JEUDY

Table of contents

Introduction

Problems to solve

Goal of the project

Public cible

Data Source

Methodology

Exploratory and Analysis

Visualization

Machine Learning

Index Health Access

Recommandations

Propose Solution

Presentation

Thank you

Introduction

Introduction

One afternoon, on my way home from school, I was with a friend and suddenly he screamed with a stomach ache and quickly asked to be taken to the nearest health centre. Immediately we went to the hospital, the atmosphere was overcrowded and the services were lacking,

At that time, I was concerned about only one question:

"How is access to health care in the country and where can I find a health center that can respond to his condition?"

Problems to solve

We want to help to better classify the areas of Haiti according to the health system.

Goal of the project

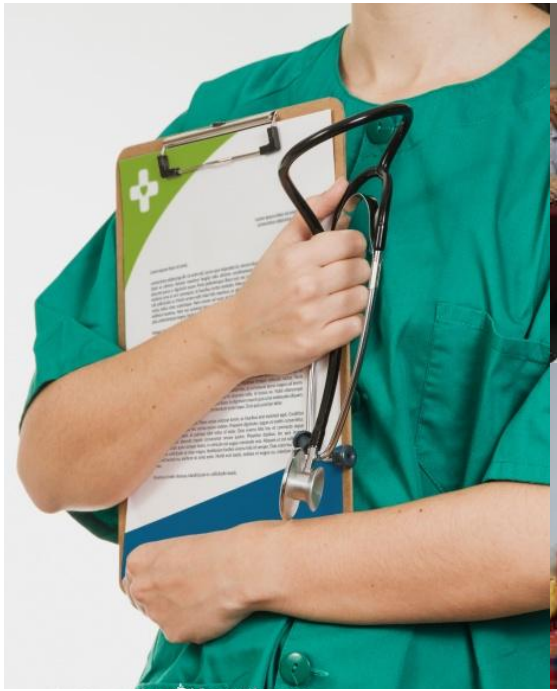
The objective of the analysis is to create a index that can recommend a health center according to two criteria which are the services offered and the location, however we will analyze the data by department and by services offered without hospitals and perform statistical procedures to better understand the Haitian health system.

Public cible

The purpose of this project can be of interest to everyone, especially people at risk of health problems who travel a lot in Haiti and in rural areas despite the lack of health care centers in the country.

But the most important stakeholders are:

01 | The Public administration
02 | Healthcare investors
03 | NGOs working in Health in Haiti



Data Source

The data that we use during this study comes from different sources, and are in fact the number of staff per health center (general practitioner, nurse, pharmacist), the type of center (Private, Public, Mixed), the capacity of operation (Hospital, dispensary, ...) and the different types of services offered (Delivery Service, Malaria Service, AIDS, Hospitalization, ...).

source - 1

SPA data Health 17-18

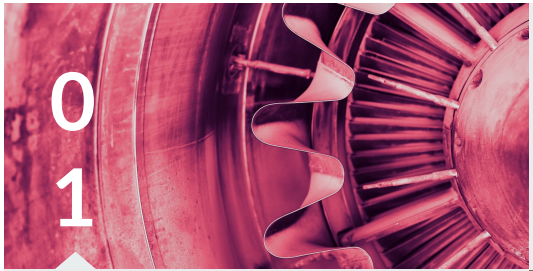
Source - 2

Ayiti Analytics Health Project

Source _- 3

Open Street Map API

Methodology



Collect data

We receive data from DHS P rogram

We complete the dataset with the data from

Ayiti Analytics data

We use Open Street Map API to find geolocate

Cleaning data

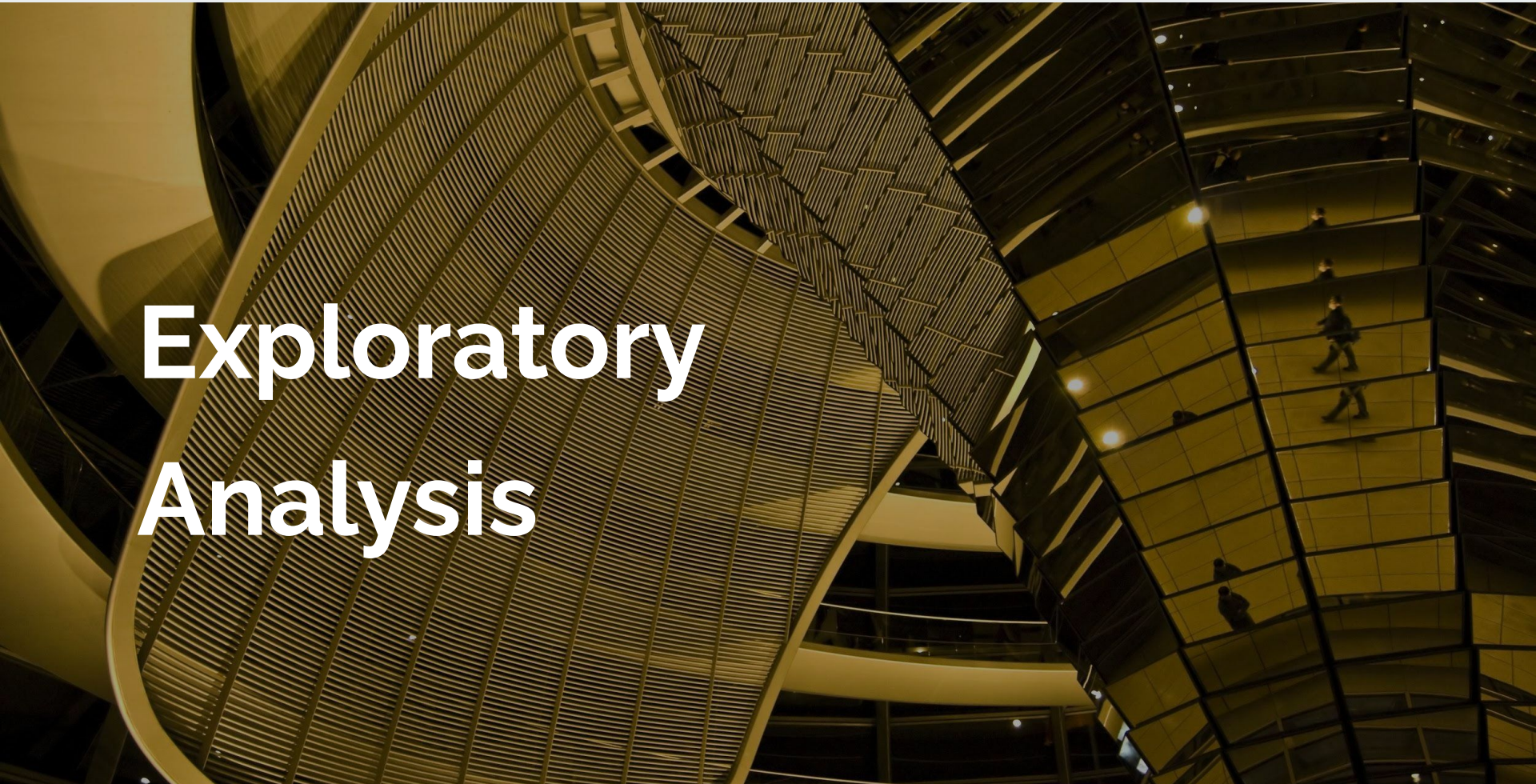
it's the most hard part , we remove and replace null values and the wrong values.

Analysis

We analyze the data

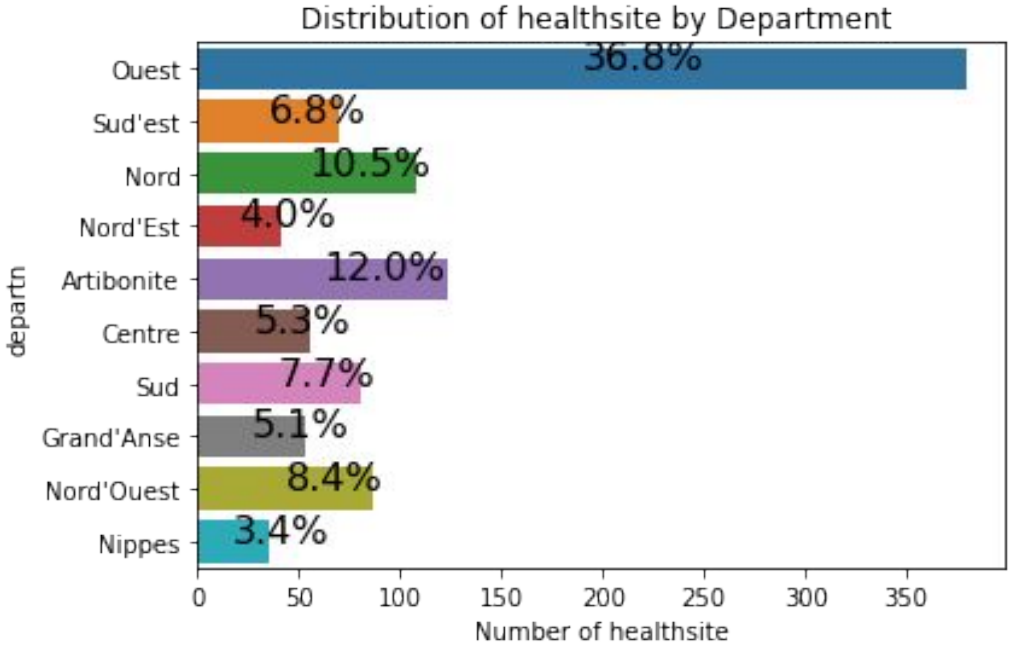
We perform a Machine Learning

(K_means Clustering)


Exploratory
Analysis

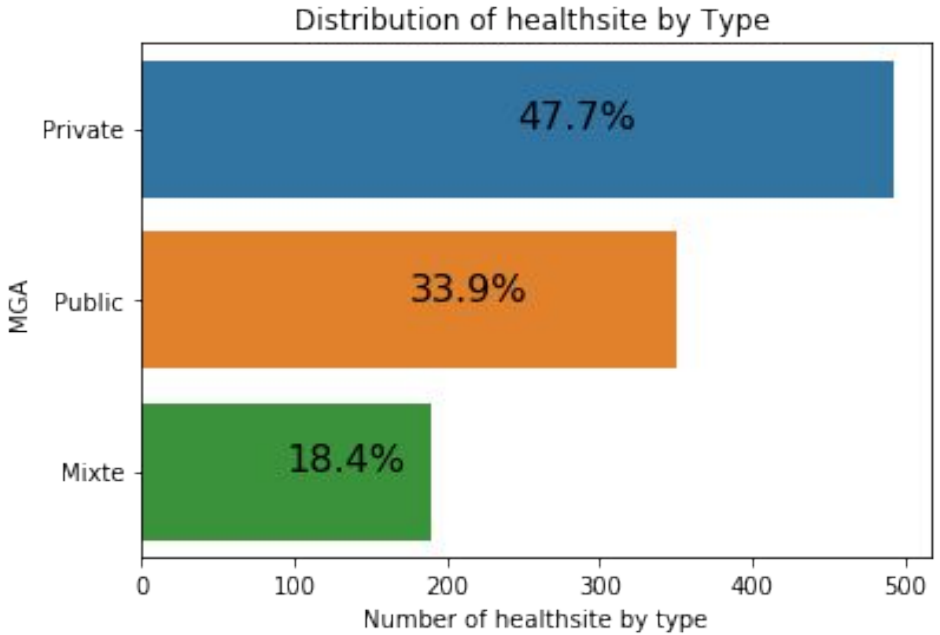
Health sites by Department

A large part of the health centers and hospitals are located in the West, department i.e. 36.8% of the total number of health centers in Haiti.



Health sites by Type

Nearly half of the health centers in Haiti are private, that is to say 47.7% which gives us about 493 private health centers against 350 public ones, so 33.9% .

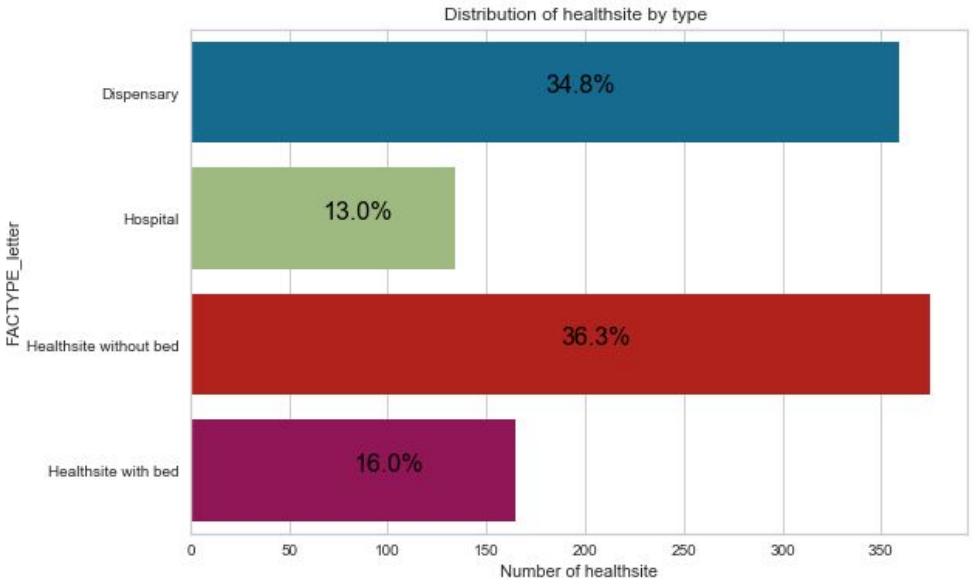


Health sites by Category

The number of health centers without beds is high, even the highest among the types, a only 29% the ability to have a bed in the entire health system in Haiti.

Consequences for the customer :

The possibility of hospitalization is low.

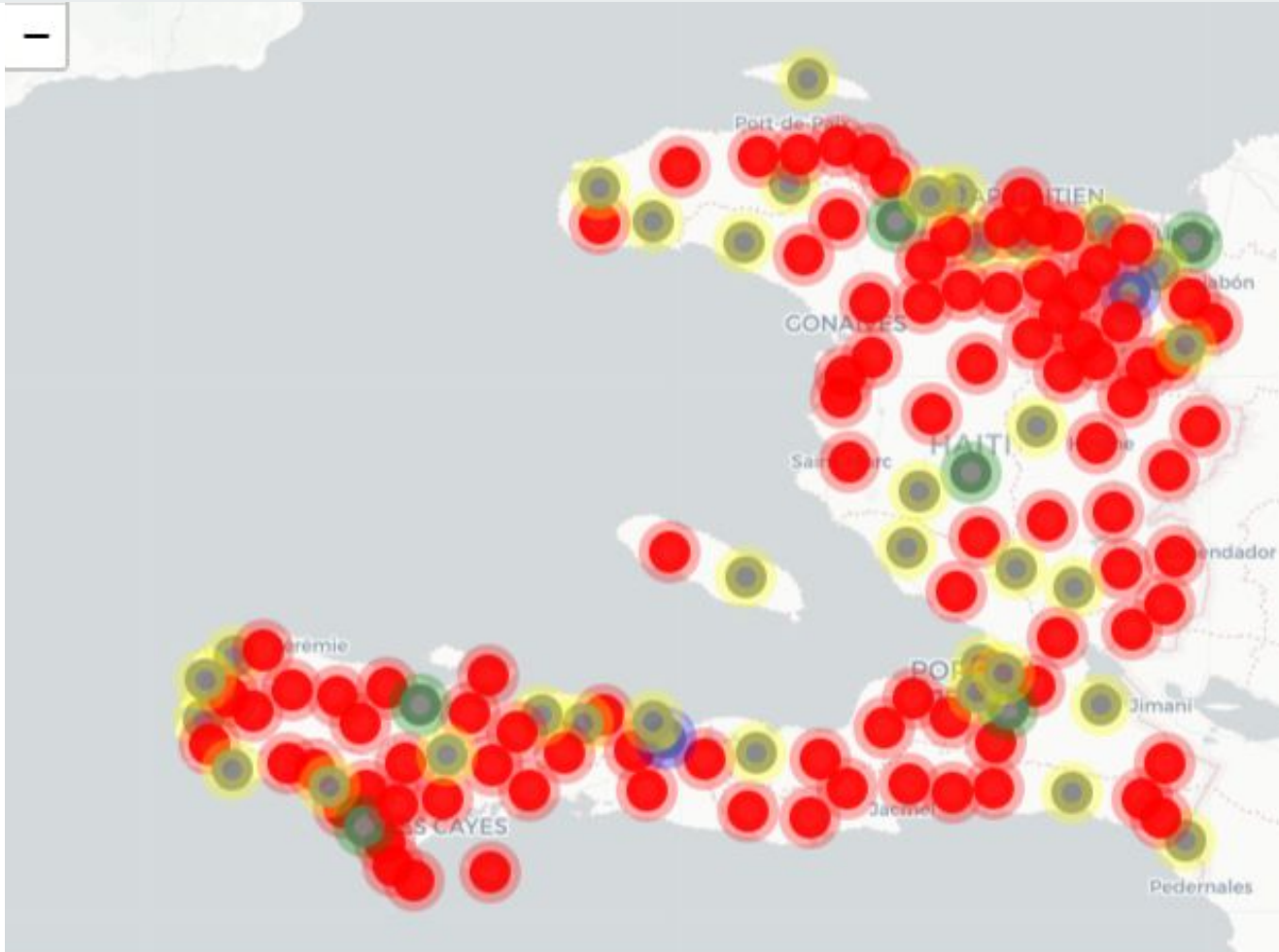


Unsupervised Machine Learning

We will perform a k-mean clustering which consists in grouping the data in several groups of commune according to their similarities of health system after having determined the optimal number of group or cluster = k.
k=4

A map of the Clusters

- Cluster_1
- Cluster_2
- Cluster_3
- Cluster_4



Description of the cluster_1

The cluster_1 counts 102 Municipalities with:

Generalist Doctors

Lab Technicians

Nurse

Pharmacist

Mean	Std	min	Max
4	3.94	0	22
3.9	3.81	0	16
8.6	12.51	0	114
0.43	0.75	0	4

By mean ,Have: Public, Dispensary

By mean ,Don't Have: Electricity_regular ,Ambulance_regular, Machine_radio ,Water_run ,Hospitalisation , Hospital.

Description of the cluster_2

The cluster_2 counts 2 Municipalities with:

Generalist Doctors

Lab Technicians

Nurse

Pharmacist

Mean	Std	min	Max
171	100.4	100	242
257.5	102.53	185	330
631.5	210	483	780
69	56.5	29	109

By mean ,Have: Private, Hospital, Electricity_regular , Ambulance_regular , Machine_radio , Water_run.

By mean ,Don't Have: Dispensary , Public.

Description of the cluster_3

The cluster_3 counts 6 Municipalities with:

Generalist Doctors

Lab Technicians

Nurse

Pharmacist

Mean	Std	min	Max
64.16	26.07	38	107
67.16	21.92	39	106
160.16	56.52	95	265
8.16	3.60	5	15

By mean ,Have: Electricity_regular ,Ambulance_regular, Machine_radio ,Water_run ,Hospitalisation .

By mean ,Don't Have: Public , Hospital

Description of the cluster_4

The cluster_4 counts 35 Municipalities with:

Generalist Doctors

Lab Technicians

Nurse

Pharmacist

Mean	Std	min	Max
12.68	9.55	1	41
14	10.04	1	43.0
38.85	38.30	4	155
1.82	1.46	5	5.

By mean ,Have: Water_run, Private, Dispensary

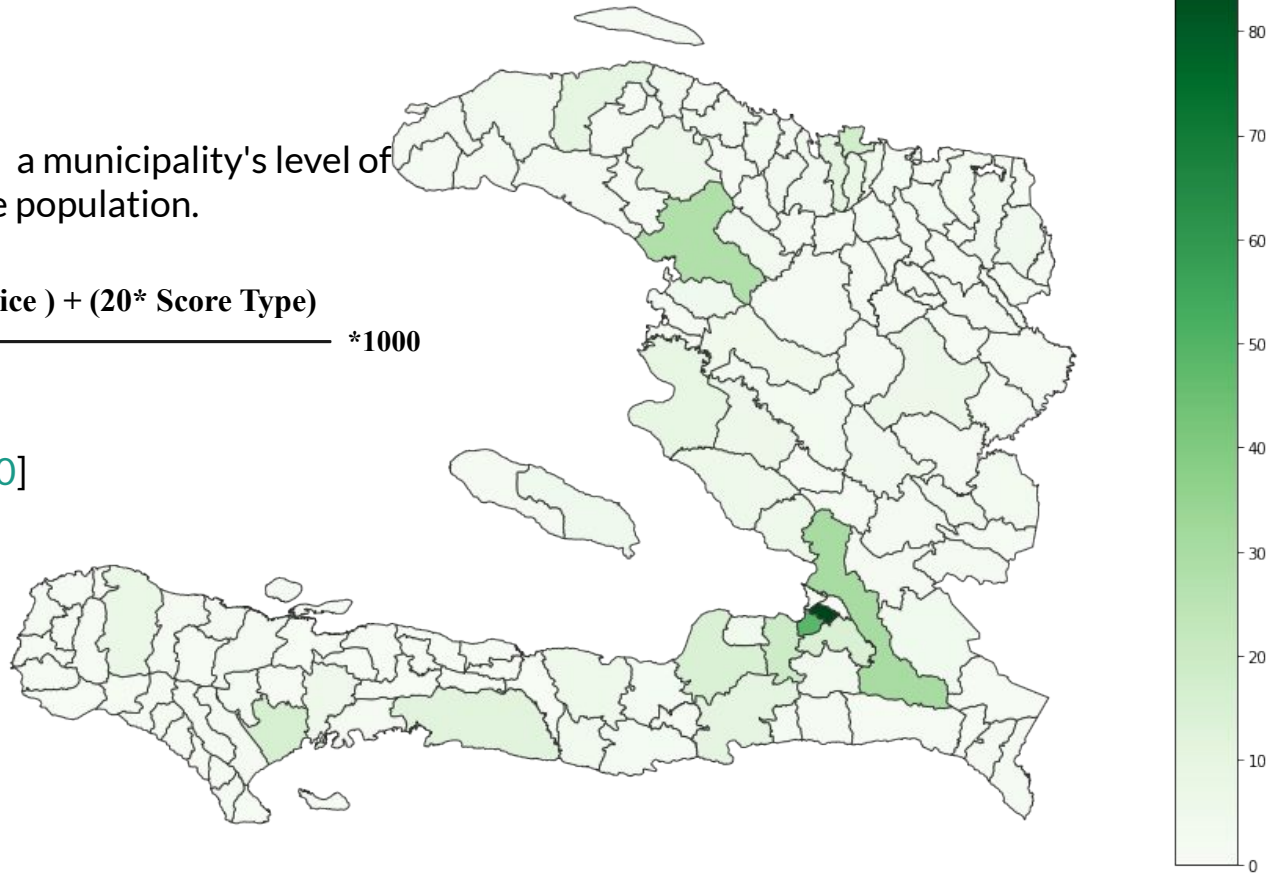
By mean ,Don't Have: Electricity_regular ,Ambulance_regular, Machine_radio ,Hospitalisation , Hospital.

Indice of health Acces

The indexof Health Access calcul a municipality's level of access to health in relation to the population.

$$IHA = \frac{(50*\text{Total Staff}) + (30*\text{Total Service}) + (20*\text{Score Type})}{\text{Population}} *1000$$

[0 < IHA < 100]



Recommandations

Proposed solution

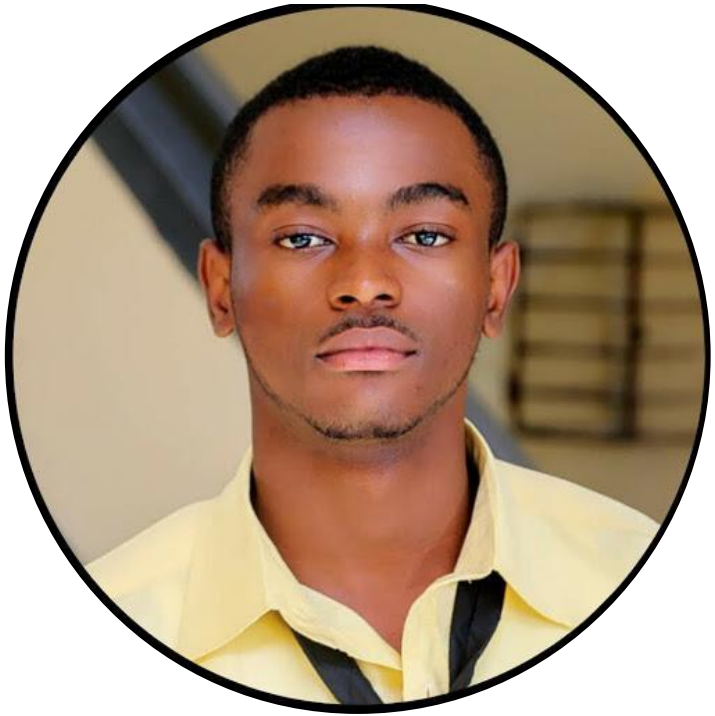
According to the data and analyses, the most obvious response to this situation is a redistribution of investments in the financial system by targeting more outside the Port-au-Prince metropolitan area.

Bootcamp Participant

Tchalins Jeudy

Economist , Planificateur, Data Science in formation

Contact : tchalensjeudy14@gmail.com



Project link :https://github.com/tchala14/Creative_Capstone

Thank you !