Capstone Project - The Battle of Neighborhoods (Part 2)

Project proposal: Mapping of vulnerable populations - Covid-19

Intervention strategy

The analysis of data from the general population and housing census (RGPH 2014) and the mapping of the territory (at the finest level) makes it possible to identify, in urban districts, the areas of concentration of populations most vulnerable to the spread of the epidemic, across two overlapping categories:

1. The socio-economic difficulty in respecting the confinement instructions (daily workers),

2. Epidemiological vulnerability (households with at least or exclusively one (s) member (s) older than 60 years or presenting with chronic disease (s)).

Step 1: collecting databases

The first step is to collect the following data sets:

- The RGPH micro-database (2014), “individual” file including the GPS location of the respondent's island2, and corresponding metadata (HCP data),
- The RGPH micro-database (2014), “households and dwellings” file including the GPS location of the household block, and corresponding metadata, (HCP data),
- The digital cartography of the administrative division of the territory at the finest scale. As regards the urban environment, the most conducive to the spread of the epidemic, it is a question of obtaining a cartography at the infra-district scale, making it possible to link a territory to the corresponding local authority (data Interior).

Step 2: cleaning and harmonization of databases

This step consists in making the various data sets communicate, to obtain a single database, comprising the following elements:

- Each individual (respondent) is affiliated with a household,

- Each household is geolocated,

- Each household is part of an administrative division,

- The administrative divisions cut across all households,

- Each household has a binary indicator, taking the value "1" if a case of contamination or significant contact with an infected person has been confirmed within the same administrative division. If a dataset including the locations (at least one level of an administrative division) of contaminated people is provided at the start of the project, this data can be included.

Step 3: construction of socioeconomic and epidemiological vulnerability indicators

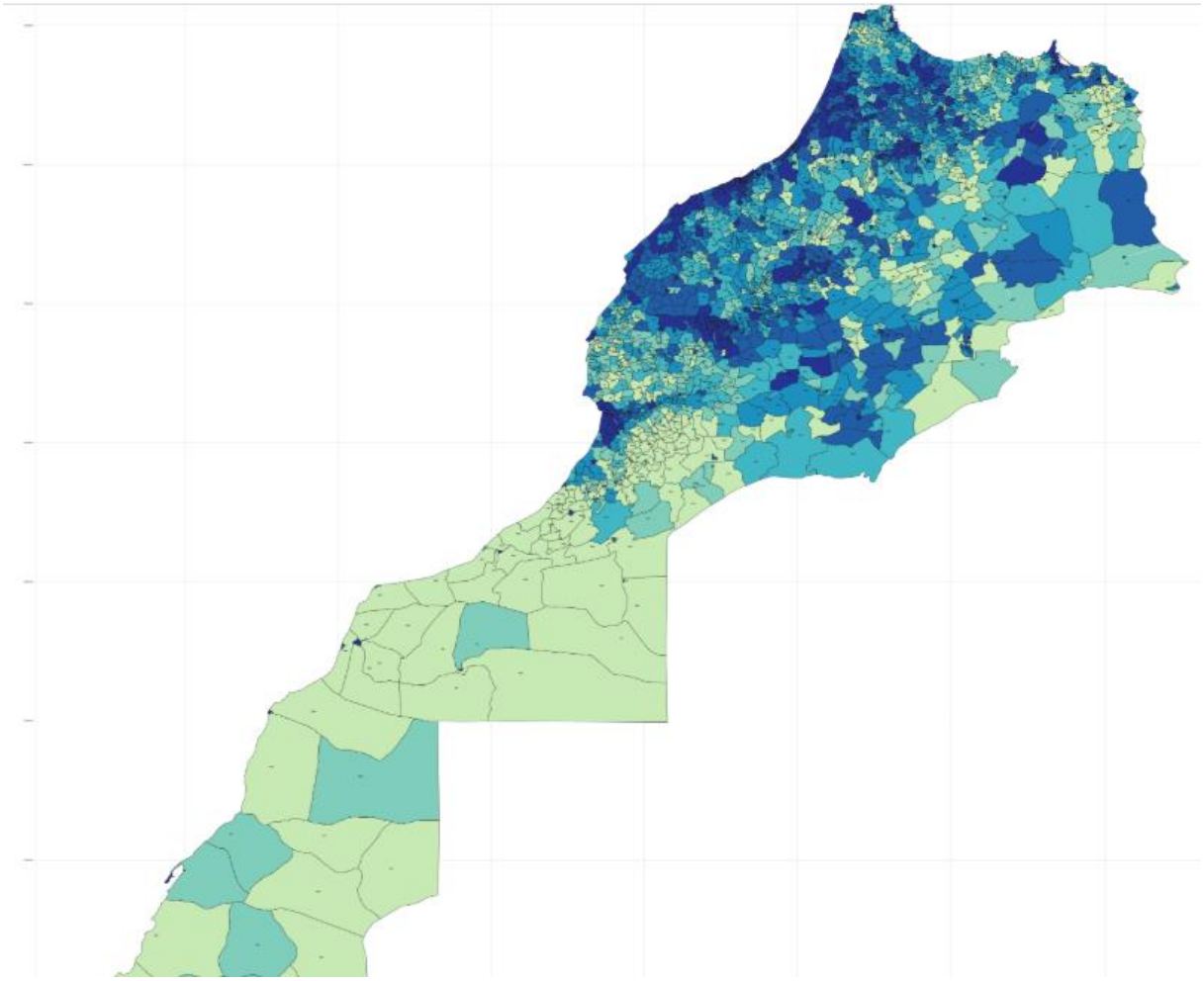
This step consists in using the degree of socioeconomic (Vse) and epidemiological (Vep) vulnerability measures of each Moroccan household.

Result:

The using of the k-Means methods let's to have several clusters. The districts of the same clusters are similar regarding these indictors.

Label	Definition
IPM	Multidimensional poverty index (MPI, percent)
IPP	Poor people deprivation intensity (percent)
TPM	Multidimensional poverty rate (percent)
TPG	Global poverty rate (percent)
compEdu	MPI education component (percent)
compHabitat	MPI housing component (percent)
compInfrastrut	MPI infrastructure component (percent)
compSante	MPI health component (percent)
distribPMonetaire	Distribution of monetary poverty only (percent)
distribPMonetaireMultidim	Distribution of monetary and multidimensional poverty (core, percent)
distribPMultidim	Distribution of multidimensional poverty only (percent)

The visualisation of the cluster is given as below:



identification of socio-economic and epidemiological vulnerability zones / clusters

This step consists in identifying the zones (each block and corresponding administrative division) which concentrate the percentage of households with the greatest socioeconomic and / or epidemiological vulnerabilities.

A table can be generated for each administrative division, showing the distribution of the most vulnerable households within the administrative division. It is also possible to generate maps showing the points where the most vulnerable households are located, in order to direct the efforts of the authorities.