Main results:
- The model is able to reproduce the regional patterns of schistosomiasis prevalence throughout Senegal quite accurately (Pearson's $r = 0.89$).
- Human movement plays an important (and nontrivial) role in schistosomiasis transmission: at small spatial scales mobility can either increase or reduce infection risk, with the latter effect being predominant at large spatial scales.
- Structural interventions and educational campaign, respectively aimed at improving access to safe water/sanitation and promoting awareness, can contribute to schistosomiasis control and eradication.

Methods:
- Schistosomiasis dynamics are described by means of a spatially-explicit model for macroparasite transmission accounting for both epidemiological processes and human mobility.
- Mobility-driven exposure and contamination are evaluated from low-resolution movement routes of anonymous mobile phone owners: specifically, they are assumed to be proportional to the time spent in a given administrative unit, as estimated from call detail records.
- Georeferenced data on demography, water supply/sanitation and schistosomiasis prevalence are used for model calibration.
- The effects of human mobility and different intervention strategies are evaluated via sensitivity analysis.

Project summary:
- We study schistosomiasis transmission in Senegal accounting for both local epidemiological processes and human mobility.
- We show that a relatively simple model can reliably reproduce regional patterns of schistosomiasis prevalence across the country.
- We use the model to study the role of human mobility on disease dynamics and to analyze intervention strategies aimed at reducing disease burden.

Possible use for development:
- A thorough understanding of disease transmission dynamics is fundamental to designing effective plans for the fight against schistosomiasis, a parasitic infection with chronic debilitating symptoms that represents a major health problem in Senegal.
- Our modeling framework represents a first step towards the implementation of a quantitative decision-support tool to help eradicate schistosomiasis from Senegal.