

My Geospatial Data Science Method for improved prediction of my Human Development Process throughout my selected Region or Country

by Tyler Frazier
February 27, 2019

Introduction

The purpose of this research is to improve upon the use of ... to generate a ... by specifying, estimating and validating a ... model as compared to ... previous work estimating a ... model. Central to achieving this research goal of ... model (for ...) will be increasing the resolution of the ... from ... to ... I will achieve this goal through meeting the following objectives.

1. Use remotely sensed data to estimate all ... locations across ...
2. Use survey data to estimate a ... model for predicting ... of all ... across ...

This work will build on previous research by ... and will incorporate new methods to implement a ... as well as recent advances towards inferring ... [1, 2, 3, 4]

Human Development Topic

1. Your problem statement
 - (a) What are the harms?
 - (b) Quantify the significance of the harms?
 - (c) Describe the inherent nature of the problem?
 - (d) Locally specific context
2. How does your selected dimension of human development relate to Amartya Sen's definition?
3. Which SDG relates to your selected human development topic?

Human Development Process

1. Describe the process
 - (a) describe agents involved, describe the environment, describe any networks that are present
 - i. describe institutions, social services, infrastructures, land use and the built environment, is there an explicitly urban, suburban or rural context?
 - ii. describe accessibility to infrastructures and/or social services, what about level-of-service?
 - (b) statistical description of the process, any noteworthy or prevalent patterns? hotspots? coldspots?
2. Analyze the process

- (a) how does your human development process behave as a complex adaptive social and/or economic system?
- (b) how does scale play a role? does your process exhibit emergence?

Geospatial Data Science Methods

1. geospatial data science methods
 - (a) identify them
 - (b) describe them
2. geospatial data sets used
 - (a) remotely sensed data (raster)
 - i. identify source, describe data
 - A. resolution of data
 - B. data used as which variable in method?
 - (b) survey data
 - i. identify source, describe data
 - A. sample size
 - B. variables
 - C. primary or secondary

Discussion

1. Reflect upon your progress thus far
2. Try to identify an area in the literature where a research gap exists
3. Draft a proposed central research question

Notes regarding this outline

1. Define your selected human development topic then describe and analyze your human development process. Think about spatial patterns (points, lines, polygons) as part of larger spatial processes.
2. You will formulate your central research question in the next assignment. It is not necessary to propose solutions (answers) until after you have clearly articulated your central research question.
3. Policy solutions will likely not be very relevant at this point. Broad, general investigations will likely contribute little to your deeper research focus into your selected topic, application of methods and use of datasets.
4. Noting human development geographies where your topic is relevant as well as site specific context is important but do not let political geographies serve as a constraining factor at this point.

References

- [1] Adrian Baddeley, Ege Rubak, and Rolf Turner. *Spatial Point Patterns: Methodology and Applications with R*. CRC Press, 2016.
- [2] Tyler Frazier and Andreas Alfons. “Generating a close-to-reality synthetic population of Ghana”. unpublished. accessible at <https://works.bepress.com/tylerfrazier/>. 2012.
- [3] David W. Hosmer, Stanley Lemeshow, and Rodney Sturdivant. *Applied Logistic Regression*. Wiley, 2013.
- [4] Dana Thomson et al. “GridSample: an R package to generate household survey primary sampling units (PSUs) from gridded population data”. In: *International Journal of Health Geographies* (2017).