

# Take-Home Final Exam

**Due on December 10, 2017 at 11.59pm**

## Introduction

This final exam is practical. You can use any method that we discussed in class and any other method that you learned independently. There might be multiple solutions for the same target question. The key idea is to illustrate that you understand how to apply multivariate methods to real-life problems and to show your creativity.

## Data

The data consists of the weekly Google Dengue Trends (GDT) data for Mexico (National and 17 states) (<https://www.google.org/denguetrends/>) and weekly observed chikungunya cases for one of the Central American countries in 2014. Using any of the known to you methods, try to answer the following questions:

1. Which GDT variables or groups of GDT variables in Mexico are the most important ones to explain dynamics of chikungunya? Can you reduce number of potential regressors?
2. Do you observe any space-wise and/or time-wise clusters in GDT variables in Mexico?

Please, write your conclusions in a comprehensible form and include your code.