Patrick Liu

CS&SS554

HW3

2/8/2017

1. )

Improved understanding of geographic variation and inequity in access to health resources within countries will play a key role in their abilities to effectively target policies and direct action towards the most vulnerable populations. Most estimates of routine vaccination coverage (ie DPT3, MCV, Polio, BCG) are reported at the national level—or sometimes admin1—and thus don’t provide enough detail for policymakers to understand these disparities.

I am interested in mapping a surface of vaccination coverage for DPT, MCV, and/or PCV in Uganda, a GAVI country that, since 2000, has greatly improved access to vaccination but is still has a DTP coverage of 72% (GAVI HHS 2010) and is struggling to roll out newer vaccines such as PCV. Through this exercise, I hope to be able to understand the geographic disparities in routine vaccine coverage, in newer generation vaccinations (ie PCV), and in drop-out between doses (DPT1-3, PCV1-3).

My primary data source will be the Uganda 2011 DHS (potentially earlier surveys), which is geo-located at the cluster level. I will plan to use pixel-level covariates from the University of Oxford (eg light at night, population) as covariates.

2.) My outcome(s) of interest is coverage of DPT1/2/3, MCV1, and/or PCV1/2/3, which are binomially distributed. Generalized model will be:

where and S are error terms with a spatial structure using the Matern covariance function

3.) Below is a map of the clusters in the 2011 DHS where data of coverage is available:

