Despite, substantial decline in U5M, 2.8 million children under age five died in sub-Saharan Africa and 74,000 in Kenya in 2016 falling short of MDG 4. The decline rates varied between and within-countries due to geographical inequalities in the distribution and use of resources. To accelerate U5M decline and achieve SDGs requires assessment of what led to the observed decline and which interventions are needed and where needed. This demands innovative approaches to harmonize and analyze multiple data sources at resource-allocation and decision making geopolitical-units.

Objective
1. Modelling county level variations in under five mortality (U5M): 1965-2014
2. Deriving county level estimates of the determinants of child survival :1990-2015
3. Assessing the association and contribution of the determinants to U5M variability at county level: 1990-2014

Data
We make use of population census, sample household surveys, health management information systems and environmental data available in Kenya since 1989.

Preliminary Results

Under five mortality

Preliminary results using loess regression to smooth demographic estimates and space time areal level models to enhance estimates show that U5M declined heterogeneously between 1965 and 2014. A great variability exists between counties; those in Western and Coastal regions having consistently high U5M levels compared to Central and some parts of Northern Kenya.

Coverage of determinants: malaria prevalence as an example

On average malaria prevalence declined by 88% from 1990 to 2015. The decline was heterogenous with high transmission associated with areas surrounding Lake Victoria and the Indian Ocean coastline throughout. In the semi-arid North-Eastern and central regions prevalence declined to very low levels (<1%) from values of 9 to 14% in early 1990s

Conclusions
The synthesized determinants depict similar spatial-temporal trends with burdened counties corresponding to those with high U5M, however the contribution of each determinant to U5M variability will be quantified as part of this study. The results should prove useful in the current devolved system of government where decisions are based at the county and for tracking inequalities relevant to achievement of SDGs. Poor performing counties should be benchmarked with better performing counties through targeted resource allocation.