Data Science and Math in Global Health: Two Examples

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Advances in affordable computation and internet coverage are creating new possibilities to describe and understand global population health. This talk will describe two innovative mathematical and computational approaches to describing population health at a global scale. The first is a novel application of the singular value decomposition to estimating and forecasting age-specific mortality, and the second is a statistical/machine learning approach to automating cause of death ascertainment using data from verbal autopsy - the only feasible approach to routine cause of death ascertainment in many lower- and middle-income country settings. Both approaches will be described from definition of the need through to real-world application with emphasis on both creating a useful tool and successful application of the tool in the real world.