In this talk I present work on discovery of complex anomalous patterns of sexual violence in El Salvador, and discuss challenges of incorporating machine learning-based decision support systems in this context, with an emphasis on fairness-related risks. When sexual violence is a product of organized crime or social imaginary, the links between sexual violence episodes can be understood as a latent structure. This enables the use of data science to uncover complex spatio-temporal patterns. We provide evidence of phenomena that have not been previously reported in literature. Such analyses could be conducted in real-time, enabling early detection of emerging patterns to allow stakeholders to react accordingly. However, the use of machine learning to assist public service agencies is both promising and concerning. The characteristics of available data and the context in which algorithms would be deployed give rise to several challenges, many of which have not been sufficiently addressed in the machine learning literature. The presence of selective labels, unobservables, and the effects of omitted payoff bias are some of the issues that arise. I discuss how, when left unaddressed, these may lead to systemic biases, self-fulfilling prophecies and loss of human trust in the systems. (Received August 28, 2018)