## JOINT DISEASE MAPPING IN GEOGRAPHICAL VETERINARY EPIDEMIOLOGY: A MULTIVARIATE BAYESIAN GEOSTATISTICAL APPROACH

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Ecological characteristics of the environment are relevant for the diffusion of the parasites through the vectors/host chain and lead to strong spatial patterns of infection risk, even on a large geographical scale.

When two different parasites shared the same vector what we could expect is some similarity in the spatial distribution of the risk. Considering the joint distribution of more than one parasitic infection could contribute to clarify the role of common features and what is the extent of any specific spatial variation.

We take advantage of a Veterinary Epidemiology survey on sheep parasites to develop a Bayesian approach to analyze the multivariate geographical distribution of five different parasites in the Campania Region (Italy), 2004-05.

Model-based Geostatistics and Bayesian approaches are useful in the context of Veterinary Epidemiology when point data have been collected by appropriate study design (Biggeri *et al.* SMMR 2006). We specified several Multivariate Bayesian spatial models and Multivariate Bayesian prediction were performed to predict the continuous risk surface of more than one parasite infection on the study region.

The models results were consistent each other and the Multivariate Bayesian approach proved useful in quantifying the impact of common vectors and inferring the presence of previously unknown shared ecological components.