

The power of statistics

Improved estimation of hunting harvest using covariates at the hunting management precinct level

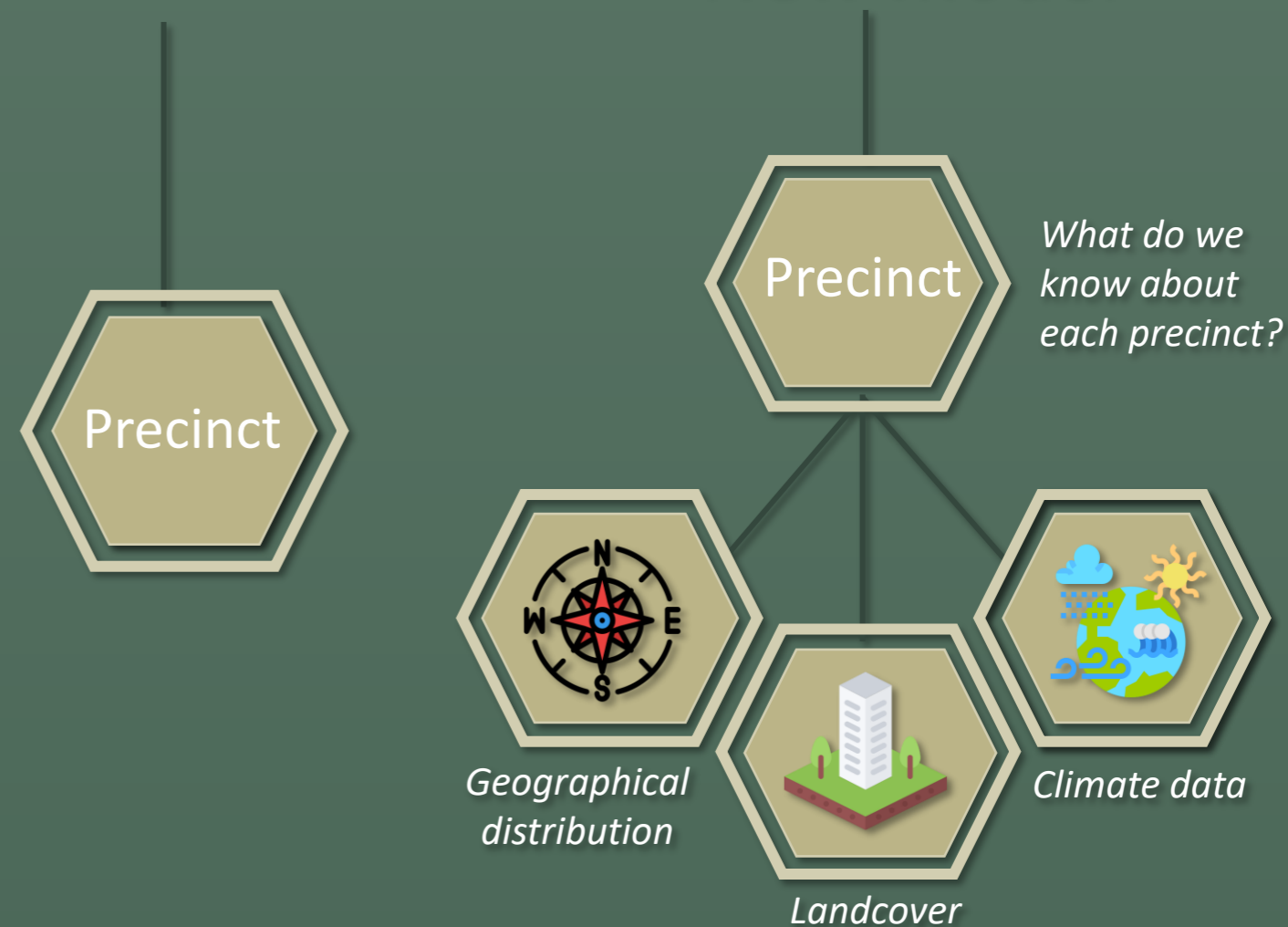
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Background

Reliable harvest estimates are vital for wildlife management. The present estimation model only considers hunting management precincts as the finest scale. Therefore, additional variables were added to the model to investigate if this could improve the former model.

Former model vs New model



Effects of covariates

Species

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Summary and Conclusion

This study developed a framework for studying the effect of climate, land cover, and geographical distribution of harvest estimates and suggests that hunting estimates can be improved by taking these factors into account.

Results

For all model species, the covariates model ranked highest, and at least one covariate had an effect on harvest estimates. If the covariate had a positive value, there was a positive effect of the covariate on hunting abundance for that species.



Farmland



Deciduous forest



Coast line



Infrastructure



South of Sweden

Methods

The former and new model uses a Hierarchical Bayesian framework, and model selection was performed by cross-validation (Pareto Smoothed Importance Sampling) and Markov Chain Monte Carlo algorithmics. For the new model, fixed effects were added at the precinct level. Each precinct was initially linked to different variables, including land cover (deciduous forest, not temporary forest, arable land, wetland, water area, and coastline), climate variables, wildlife accidents, and geographical distribution. Throughout model selection, covariates that either had a positive or negative correlation or when the 95 % credible interval included zero was removed. More results were to be found. If this is of any interest, please contact me at paujo299@student.liu.se

