// apply pandoc div.sourceCode style to pre.sourceCode instead (function() { var sheets = document.styleSheets; for (var i = 0; i < sheets.length; i++) { if (sheets[i].ownerNode.dataset["origin"] !== "pandoc") continue; try { var rules = sheets[i].cssRules; } catch (e) { continue; } for (var j = 0; j < rules.length; j++) { var rule = rules[j]; // check if there is a div.sourceCode rule if (rule.type !== rule.STYLE_RULE || rule.selectorText !== "div.sourceCode") continue; var style = rule.style.cssText; // check if color or background-color is set if (rule.style.color === '' || rule.style.backgroundColor === '') continue; // replace div.sourceCode by a pre.sourceCode rule sheets[i].deleteRule(j); sheets[i].insertRule('pre.sourceCode{' + style + '}', j); } } })();

Stochastic spatial simulation:

Scenario analysis for the arrival of a new sheep pathogen

Steven Riley, Kylie Ainslie

2019-02-01

Objectives

After successfully completing the practical, you will be able to: * load and visualize spatial point data * define a simple spatial seeding process * describe precisely the naive algorithm for simulating the isotropic spatial transmission of an infectious agent amongst a population of stationary hosts * understand how some calculations can be pre-cached to improve efficiency * define a spatial transmission kernel that will die out in one location but cause a large outbreak in another * define a kernel that produces sub-expoential wave-like patterns of spread * discuss the key trade-off that must be considered for spatially heterogeneous vaccination campaigns

Format

Timing We have 2 hours to meet our objectives. However, I would expect people to progress at quite different rates depending on their familiarity with the concepts and their experience with R. At various points in time we will come together as a group to review answers and to discuss issues that arise. We will break for 15 minutes after 60 minutes and we will use the last 10 minutes to address any outstanding issues.

Approach Most of this practical should be completed in pairs. The demonstrator will help you to organise yourselves so that each pair has someone who is confident with R-based computation. The initial questions are very specific and are designed to help you familiarise yourself with the model and its implementation. As you move through the practical, the questions become more and more open-ended. The final questions are, really, suggestions for mini research projects that you can start today or pick up in your own time after the practical. You may want to break out of your pairs as you start to tackle the later questions.