Agent-Based Models for Public Policy Planning

July 15 – 19, 2019@Snellius

Below is a short report on our findings.

Description and aims

The aims of the Agent-Based Models for Public Policy Planning workshop was to bring researchers from agent-based modeling, statistics, and computer science together with public policymakers, in order to discuss practical and theoretical issues around the use of agent-based models (ABM) for public policy, and to build one or more prototypes of ABMs for addressing practical public policy issues.

Outcome

During the workshop a number of modeling workstreams were formed to address the following public policy topics: (1) how the number of appeals of speeding fines changes under different fine policies, (2) the circular economy for cars, (3) migration, and (4) the use of wildflowers for the control of crop-eating pests as an alternative to pesticide use. By the end of the workshop, all four of these workstreams had produced a prototype ABM. A number of other breakout sessions explored broader themes, including use of ABMs for prediction, the use of ABMs in a macroeconomic context, and the scalability of ABMs. Several of these teams continue to work on these topics with the intent of writing a scientific paper and/or submitting a grant proposal to fund further research. Nearly all participants joined an ongoing group chat (Slack) so that we can continue to share documents and discussion as we move forward.

Workshop format

The workshop started with training in NetLogo, a freely-available software program that is useful for building ABMs. Each morning there were a few talks followed by several breakout groups centered upon themes that had been identified by participants during the first day. The breakout sessions turned out to be very effective in determining the problems associated with trying to capture the specific policy problem with an ABM that is simple enough to be programmed in NetLogo yet rich enough to explore the effects of policy changes. The organizers had initially envisioned that participants would be involved in several breakout groups but it quickly became clear that the teams were enthusiastic about making substantive progress and wanted to work more deeply on the topic they had initially chosen. The combination of presentations at the start of each day followed by more practical work on of the themes in the breakout sessions was found to be very productive, according to most participants. In the middle of the workshop, the teams provided an update on their progress. On the final day, each of the teams presented their ABM prototype.

Further Comments

The workshop has built a bridge between Dutch and American policymakers, ABM researchers from a variety of different disciplines, and statisticians. The facilities at the Lorentz Center were conducive to the small-team framework and contributed to the success of the workshop.

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