Disaster Simulation: An AnyLogic Agent-Based Approach

Example:
Flood simulation and evacuation
GIS Environment

Ali Asgary
ADERSIM
York University
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Lesson 6: Extracting Simulation Results-Charts and Graphs- Part 1

• Creating Time Plot Chart for Person agent
Introducing Analysis and Chart Tools

- We want to create a graph that shows number of people in different states (normal, warning, evacuating, evacuated) at any given time.
- To do this we use Charts that exist in the Analysis tools in the Palette.
- There are various types of charts that we can use depending on our needs.
- Charts presents the values of variables that we have defined in our model.
- As our simulation runs the values of our variables may change and we can observe their changes in different graphs.
- In this lesson we will use different types of charts
Creating a chart for Person agent

For Person agent we created two variables in the Main that show the number of people evacuating and evacuated.

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Drag and drop a Time Plot chart to the Main
Hold the lower right corner of the graph and expand the graph.
About 6 blocks high and 8 blocks wide.
Each graph has a number of properties that you can use to define the data and how you want to present them in your graph. We will change properties of our graph in the next few slides.
Click on your graph to see its properties on the right side.
Expand the Data property of your chart and click on the plus sign to add variable that represent your data.
Select Value.
Change the Title to: Number of people evacuating
Change the Value to: evacuating.
You can change the Point Style, Line Width and Color if you like.
Note that the evacuating here refers to the evacuating variable
Now expand the Data update part. Here you can define the starting time, time intervals, and the length of your chart in time.

Select the Update data automatically. We just change the Display up to 100.
Expand the Scale section and change the Time window to 100.
Depending on what you want to do with your chart, you can set its Vertical scale to Auto or Fixed mode.
Add another variable to your chart
Add evacuated for the value. This will add another line for evacuated people in the chart.
Before you run and see your chart, click on the Run Flood button and deactivate the floodEvent.restart(); by adding // before it. We do not need this event at this time.
Run the model
Results

If there is no error, you will see your chart with the number of people evacuating and those evacuated. Please note that this is a simple process just to show you how agent based simulation works. We will make this model more realistic as we go.
Results

- People who are evacuating move to the evacuation area
• Using Time plot is just one way of extracting numerical and graphical results from our simulation.

• In the next lessons we will show you more ways of extracting output from your simulation.