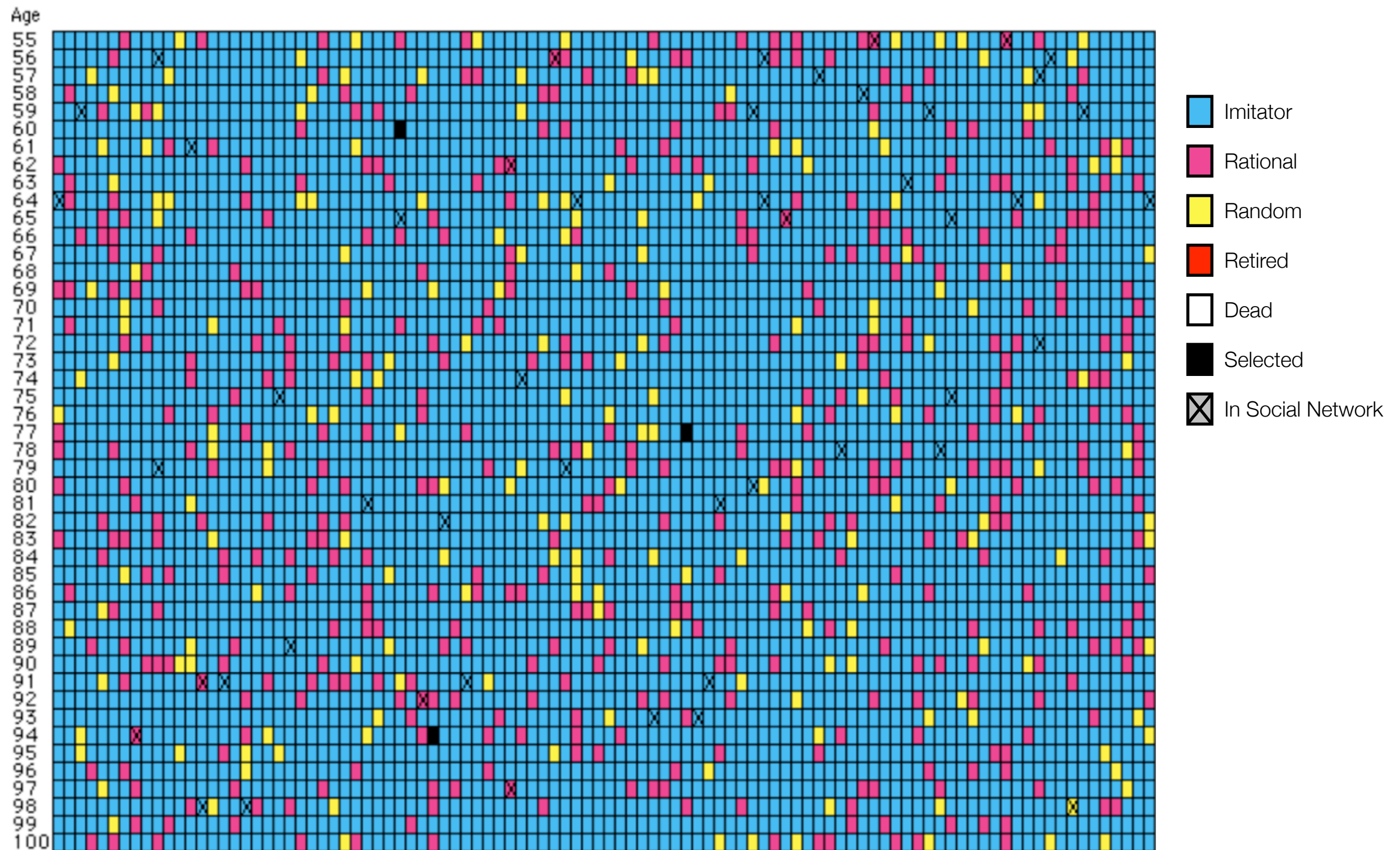# Retirement Redux: Visualization

Ernesto Carrella
Joseph Harrison

Original GUI

Souce: Axtell and Epstein (2006)

Model Overview

■ • Rational Agents: retire as soon as they are allowed

■ • Imitator Agents: retire when a large enough proportion of social network has retired

■ • Random Agents: flip a coin each year

Visualization Challenges

- Cohorts should be rows

  - MASON grids are in Object[x][y] form, Object[i] is the ith column

- Social network

- Grid lines

- Age labels along the left side

Challenge: Row-based cohorts

Solution:

Store agents in an auxiliary array
```
Agent[][] agentMatrix;
```

such that:
```
agentMatrix[i]
```

gives the ith cohort

Then copy and transpose the auxiliary array to MASON's display grid:

```
for (int i = 0; i < agentMatrix.length; i++)
    for (int j = 0; j < agentMatrix[0].length; j++)
        model.agents.field[j][i] = agentMatrix[i][j];
```

Challenge: Draw the social network

Solution:

Add flag `boolean showInNetwork` to Agent class

Create custom grid portrayal class
    `AgentGridPortrayal2D extends ObjectGridPortrayal2D`

    Override `setSelected(..., boolean selected)` function
        go through agent's network and set `showInNetwork` to `selected`

Custom agent portrayal class
    `public class AgentPortrayal2D extends RectanglePortrayal2D`

    Override draw function:
        Set color based on agent type and status
        Call `super.draw(...)` to draw agent color
        `if (agent.showInNetwork)`
            draw "X" using java 2D primitives (i.e. drawLine)

Challenge: Draw the grid lines

Solution:

In `AgentPortrayal2D.draw(...)`
After drawing everything else, draw lines along top and left

Challenge: Draw the grid lines

Solution:

In `AgentPortrayal2D.draw(...)`
    After drawing everything else, draw lines along top and left

But that leaves a missing line on the right and bottom...

Challenge: Draw the grid lines

Solution:

In `AgentPortrayal2D.draw(...)`
   After drawing everything else, draw lines along top and left

But that leaves a missing line on the right and bottom...

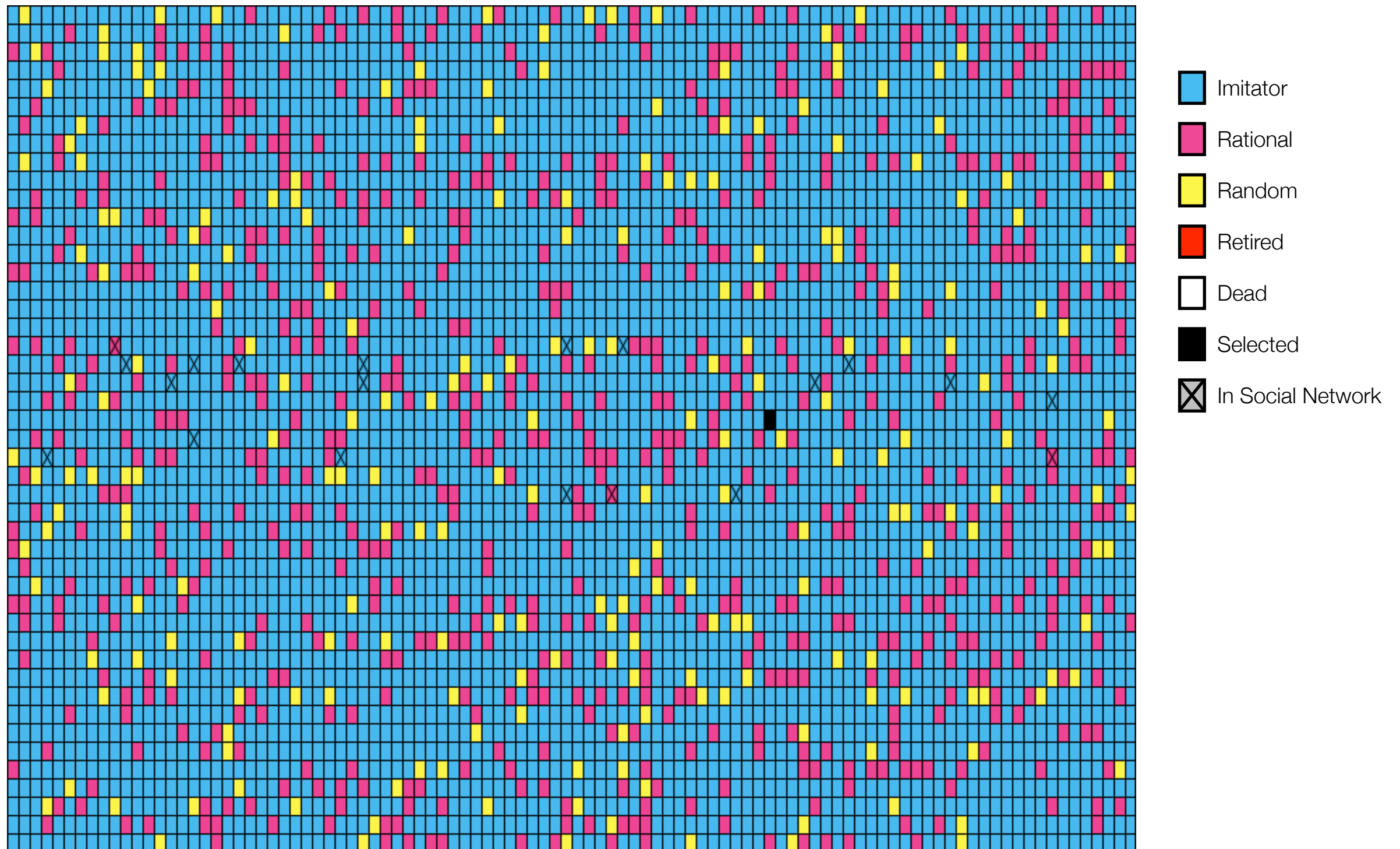## Solution:

In `AgentGridPortrayal2D.hitOrDraw(...)`
   After drawing the agents, draw long lines along right and bottom

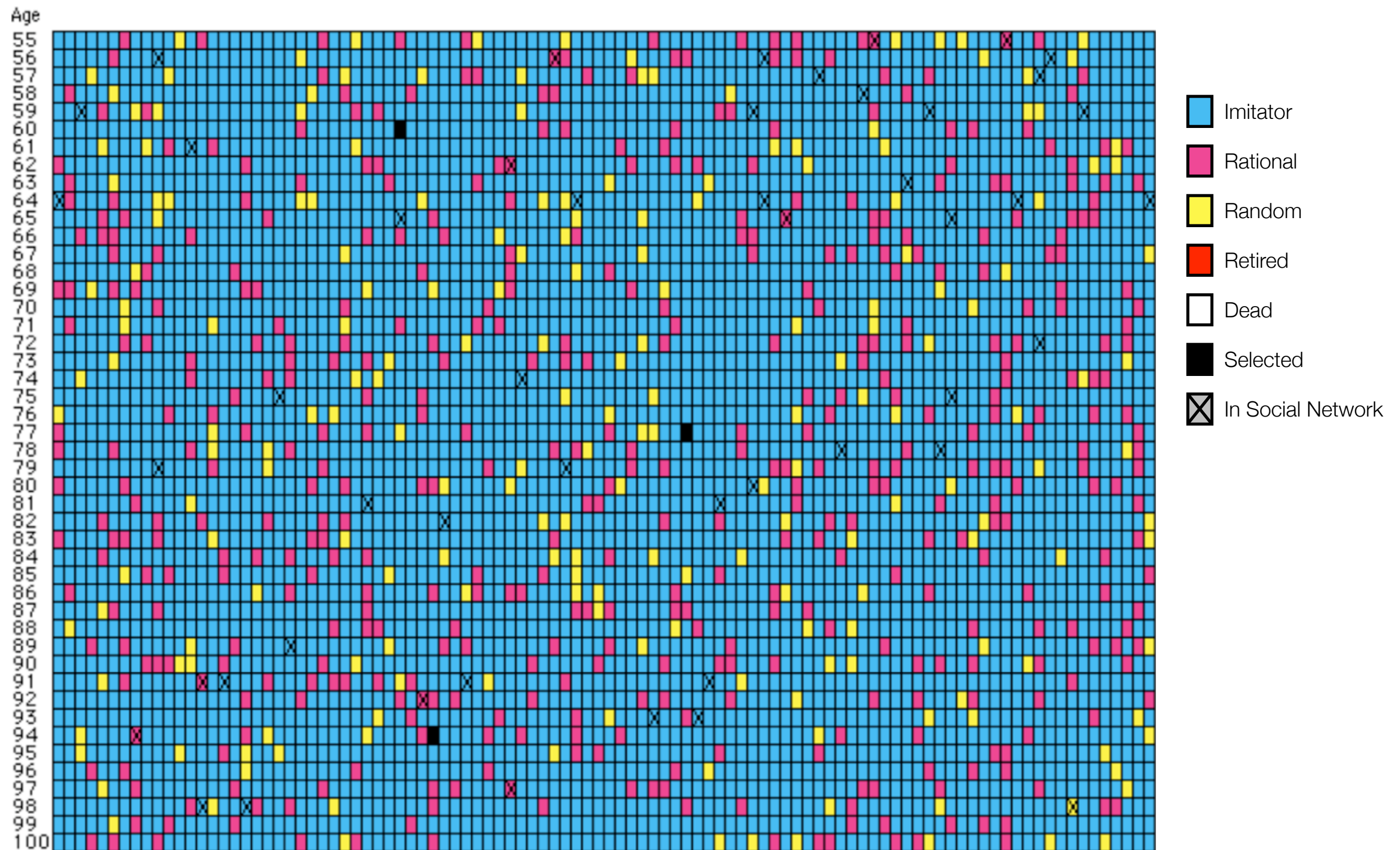# Challenge: Draw the age labels along the left side

Solution:

404 Error: Solution not found!

Replication in MASON
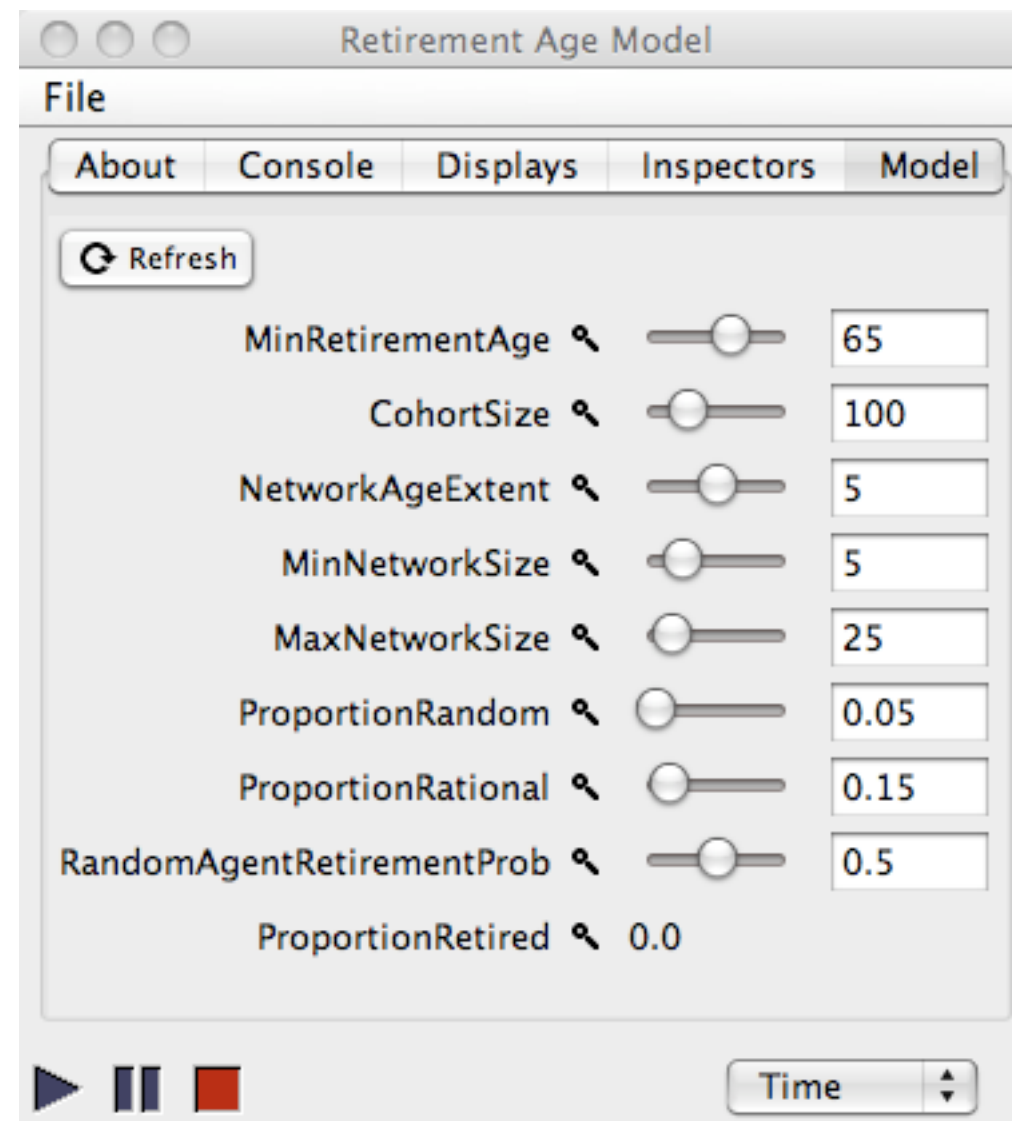

Souce: Carrella & Harrison (2011)

Original GUI

Souce: Axtell and Epstein (2006)

Model Parameters

Parameter	Value
Agents/cohort, C	100
rational agents	10%
imitative agents	85%
imitation threshold, τ	0.50
social network size, S	U[10, 25]
network age extent, E	U[0, 5]
random agents	5%
p	0.50

Souce: Axtell and Epstein (2006)

Model

- Run the model