**Title:**

**What happens when Schelling’s Segregation Model assigns unhappy cells to nearby cells?**

***Background:***

Schelling’s Model is a simulation used to model diversity and segregation. It uses a cell grid and assigns each cell a value. The model assumes that an ‘A’ or a ‘B’ will move if there are not enough similar cells. The possible values are ‘ ‘, ‘A’, ‘B’. It then sweeps through every cell and does certain things depending on what it finds in the cell and the 8 cells surrounding it. If the cell contains a ‘ ‘ it does nothing. If the cell contains a ‘A’ or a ‘B’ it checks if the proportion of similar cells (if ‘A’ then similar means ‘A’) and if the proportion is less then the threshold, T, it moves to the nearest empty cell or a select cell, or whatever the model is set to do. The goal is to model population in dense environments such as cities.

***Objective:***

I sought to see how the basic model would behave if unhappy cells moved to the closest empty cell as opposed to a random empty cell. Checking how long it would take for the system to reach equilibrium.

***Methods:***

For the random assignment next life generation: Creating a list of all empty spaces in the grid, shuffling it, and then using the first object to assign coordinates to a unhappy cell. Then deleting the first object in that list.

For the nearest assignment next life generation: Checking around in a 3\*3 grid around the cell and if that turns up nothing then checking in a 5\*5 grid around the cell and so on and so forth. Using the try command to account for outside of grid scenarios.

***Results*:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **20 by 20 board** | To nearest empty cell |  |  |  |  |
| 40% A, 40% B, 20% Empty | **# of iterations before static** |  |  |  |  |
| **Simulation Number** | **0.1** | **0.3** | **0.5** | **0.7** | **0.9** |
| **1** | 3 | 6 | 5 | 4 | 4 |
| **2** | 4 | 7 | 6 | 4 | 3 |
| **3** | 4 | 7 | 6 | 4 | 5 |
| **4** | 4 | 7 | 5 | 5 | 3 |
| **5** | 4 | 7 | 6 | 4 | 4 |
| **6** | 4 | 4 | 5 | 5 | 3 |
| **7** | 3 | 4 | 6 | 5 | 3 |
| **8** | 3 | 5 | 6 | 5 | 4 |
| **9** | 3 | 6 | 8 | 6 | 3 |
| **10** | 3 | 6 | 5 | 4 | 3 |
| **Average** | 3.5 | 5.9 | 5.8 | 4.6 | 3.5 |

As the unhappy threshold gets closer to .4 the number of iterations necessary to achieve equilibrium increase and approach 6.

0.581209556994

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False

0.817614638448

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False

0.987418831169

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False

1.03733187932

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True

1.05814703744

***Discussion:***

Here is where you should discuss your results.

Did you find what you expected to find?

What sociological implications do your findings have? When people move to the nearest location segregation forms in relatively few steps.

This model applies to large areas like countries. When people are not limited by distance and can move to any house in a city with equal difficulty then models that factor in location are less relevant.

**Presentation Guidelines (5-10 minutes)**

You will present your findings on Tuesday 11/24 during our finals block. Your presentation does not need to cover the findings of the basic model. You should highlight the work you did to extend the model, including your objectives, methods, results, and discussion. Your presentation should include a demo of your code and graphs/tables/figures as appropriate to highlight your findings.