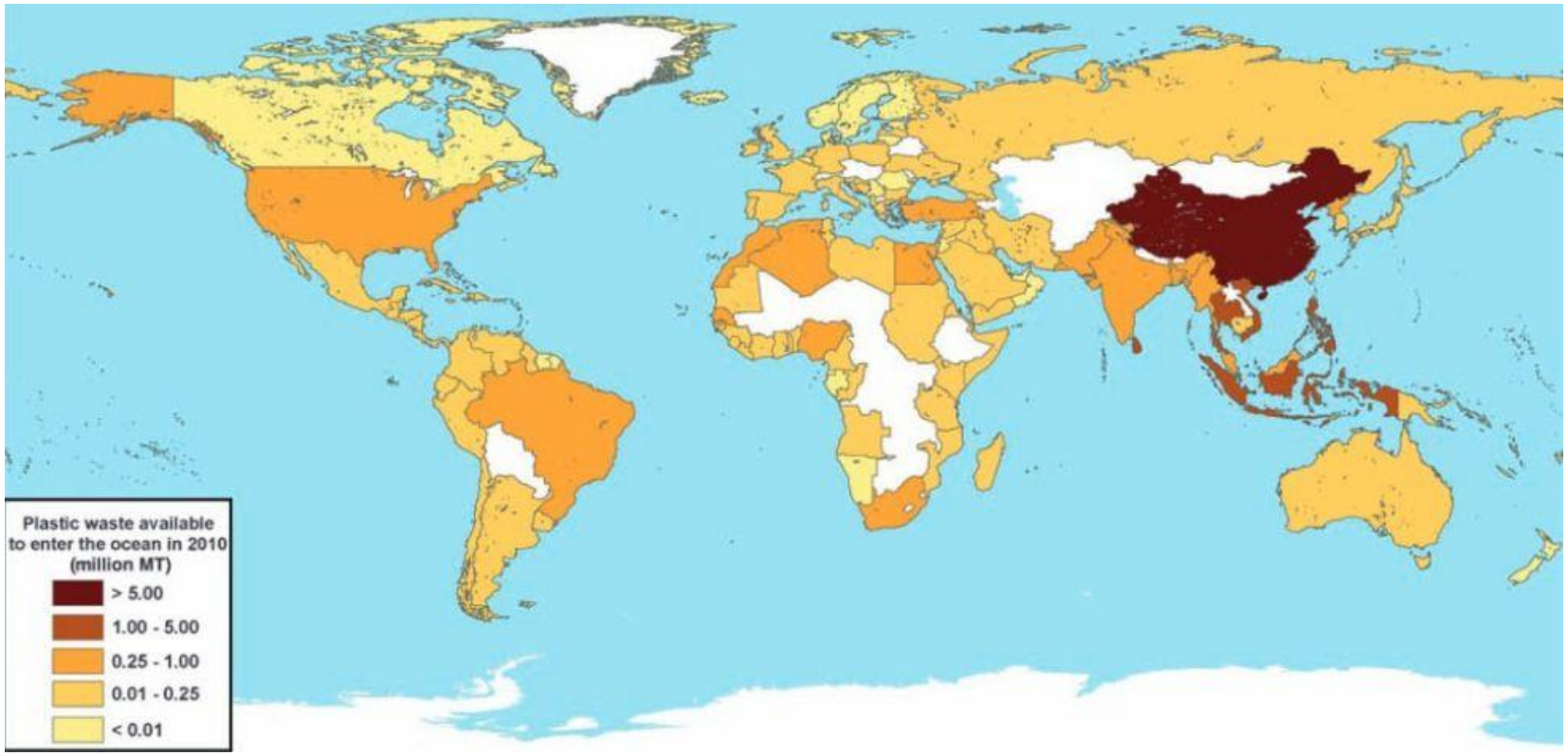
Social influence versus punishment:

A comparison of the power between individual perceptions of the environment and police punishment

Plastic waste everywhere



What is the more powerful force decreasing pollution?

- What you perceive others do in your environment?
- Or punishment by the police?

Our Model investigates …

- The behavioral dynamics and individual perceptions underlying the process of environmental pollution:
  - The effect of police punishment (Own and others‘ punishment)
  - The effect of social influence, the perception to which degree the individual environment is polluted

  → on the individual’s tendency to contribute to the environmental pollution.

The formula

Micro-level:

Probability to pollute =

individual punishment * β_1

+ others' punishment * β_2

+ perception of environment * β_3

Marco-level

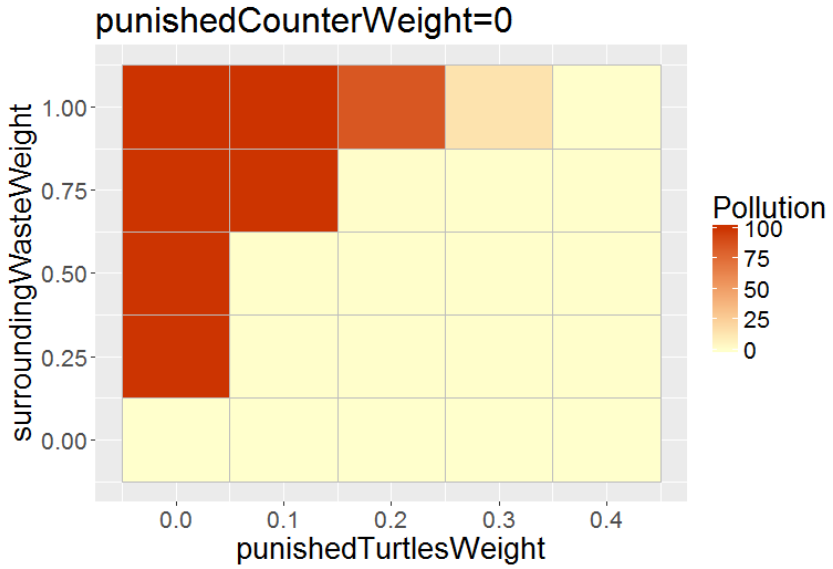
The amount of polluted patches (Brown!)

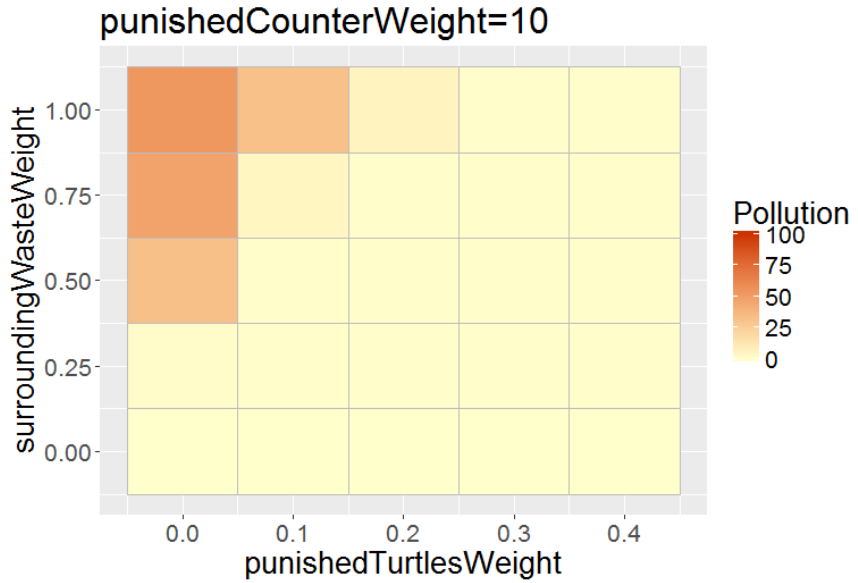
The Model 

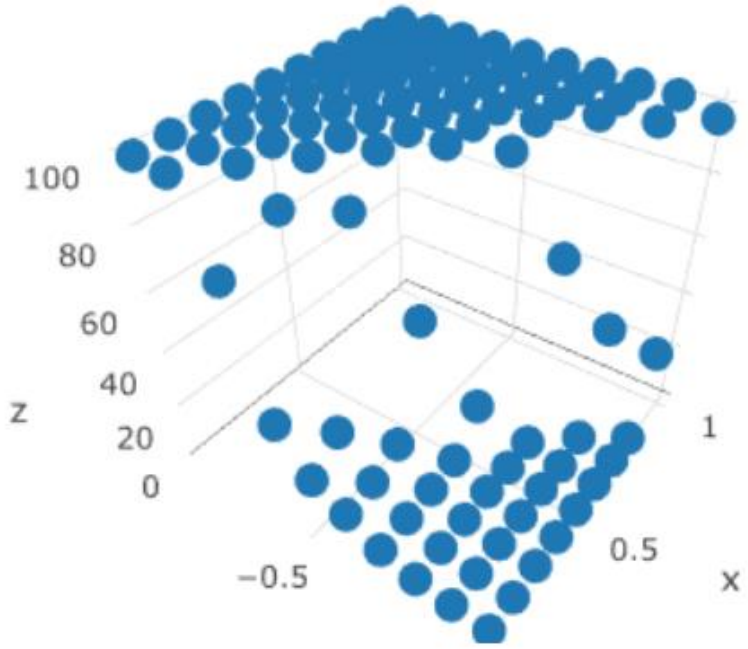
- Agents: 300 Polluters labeled with number of punishment
- Patches: 16*16 environment with certain degree of pollution (brown!)
- Cleaning rate signaled by white
- Sliders: Regulate weights of effects (Perception versus punishment)

Results: Social influence vs. punishment

- The perception of the pollution of your environment has a much higher impact on the degree of environmental pollution than the perception of how many people were punished in your environment
- Both cases, punished or not punished, show that social influence has a higher impact on individual behavior than punishment







x: Weight_surroundingState
y: Weight_Punishment
z: meanPollution (after 500 ticks)

To make this a real snapshot of the world ..

- We needed real data/ parameters to feed our model to calibrate.

Find the Code and results on GitHub:

https://github.com/paflov/pollutionModel

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