

ilakcay.jl

a model replication by Alejandro Pérez Velilla

programmed in the year 2021 AD

Ilany, A. & Akçay, E. Social inheritance can explain the structure of animal social networks. Nat. Commun. 7:12084 doi: 10.1038/ncomms12084 (2016).

Main.workspace12.ilakcay

```

• module ilakcay
•     include("ilakcay.jl")
• end

```

parameters:

p_n



0.01

p_r



0.001

num_nodes



100

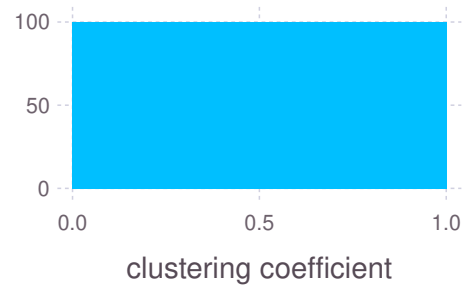
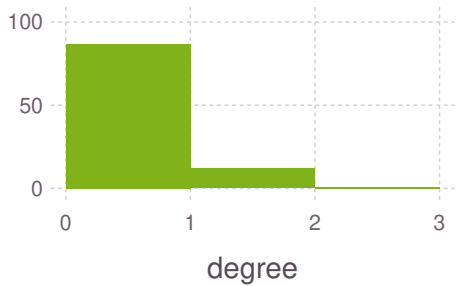
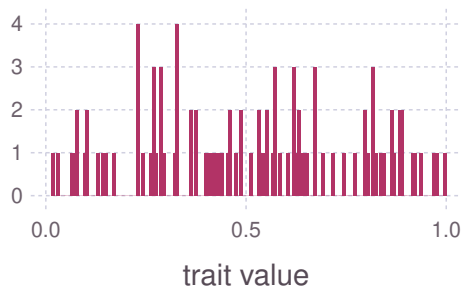
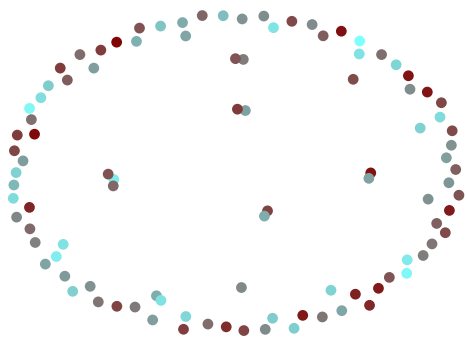
model and analysis

model =

```

AgentBasedModel with 100 agents of type Recruit
  space: GraphSpace with 100 positions and 7 edges
  scheduler: fastest
  properties: Dict{Symbol, Real}(:mean_degree => 0.0, :p_r => 0.001, :p_n => 0.01, :tic

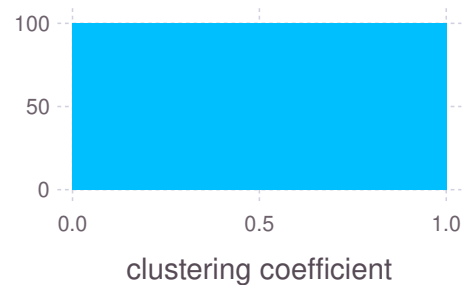
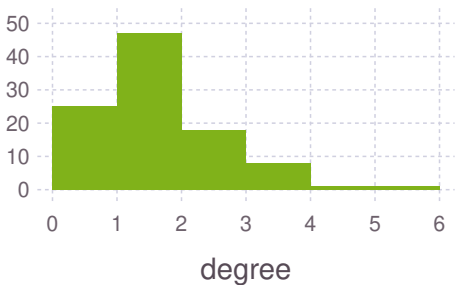
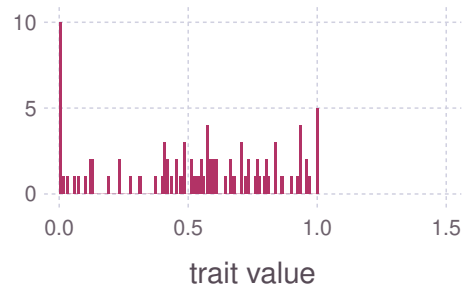
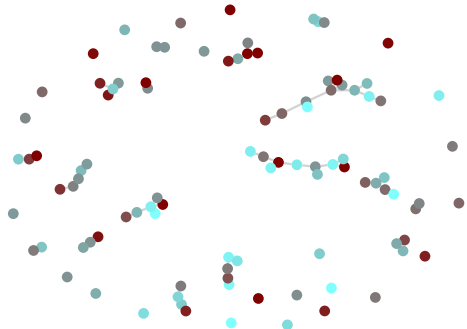
```



number of steps

$n = 2000$

model after stepping n times:



mean degree (expected, computed)

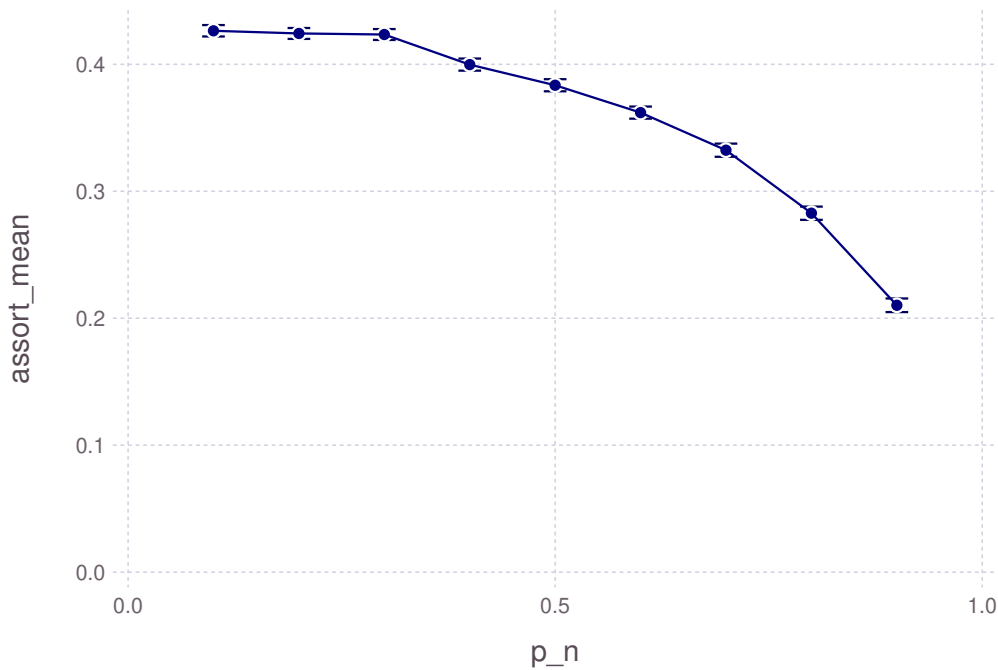
(1.10787, 1.16)

assortativity coefficient

0.7599176178218067

replicated results: number of nodes = 100. Networks were let run for 2000 steps for every value of p_n and p_r .

assortativity (mean over 500 simulations, $p_r = 0.01$)



mean degree and clustering averaged over 50 networks.

error bars are std of average mean degree and clustering. line tracks the expected mean degree as specified by the formula derived in the paper, but still have to evaluate and add expected mean clustering (lines are just average mean clustering).

