

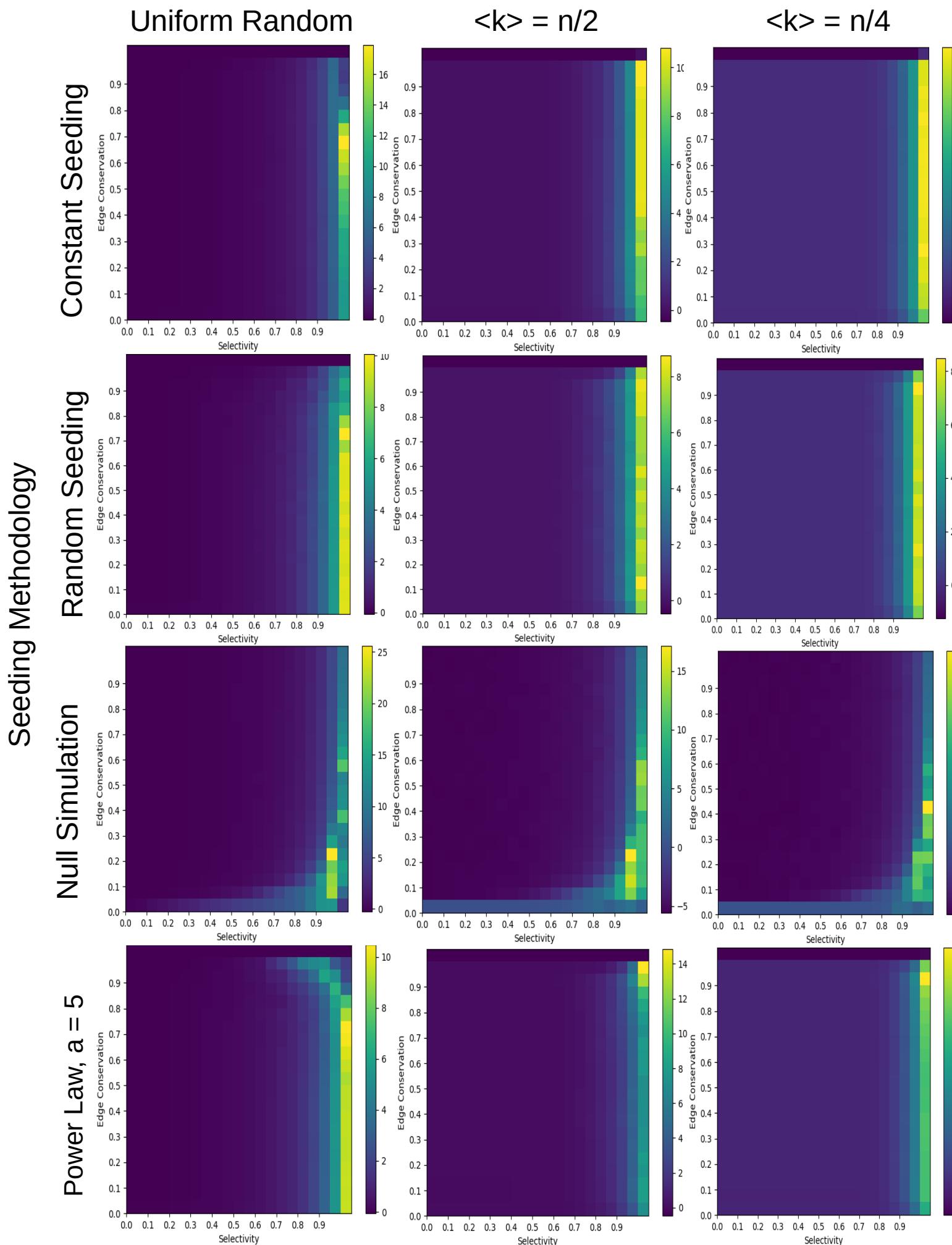
Grid-Search Plots

- 60 Nodes
- 25 Simulations per Ensemble
- Null Simulations
- 600 Runs maximum
- 200 Run equilibrium distance
- K ranges of $k=n/4, n/2, n$
- For effective distances, lower (darker) numbers are better:

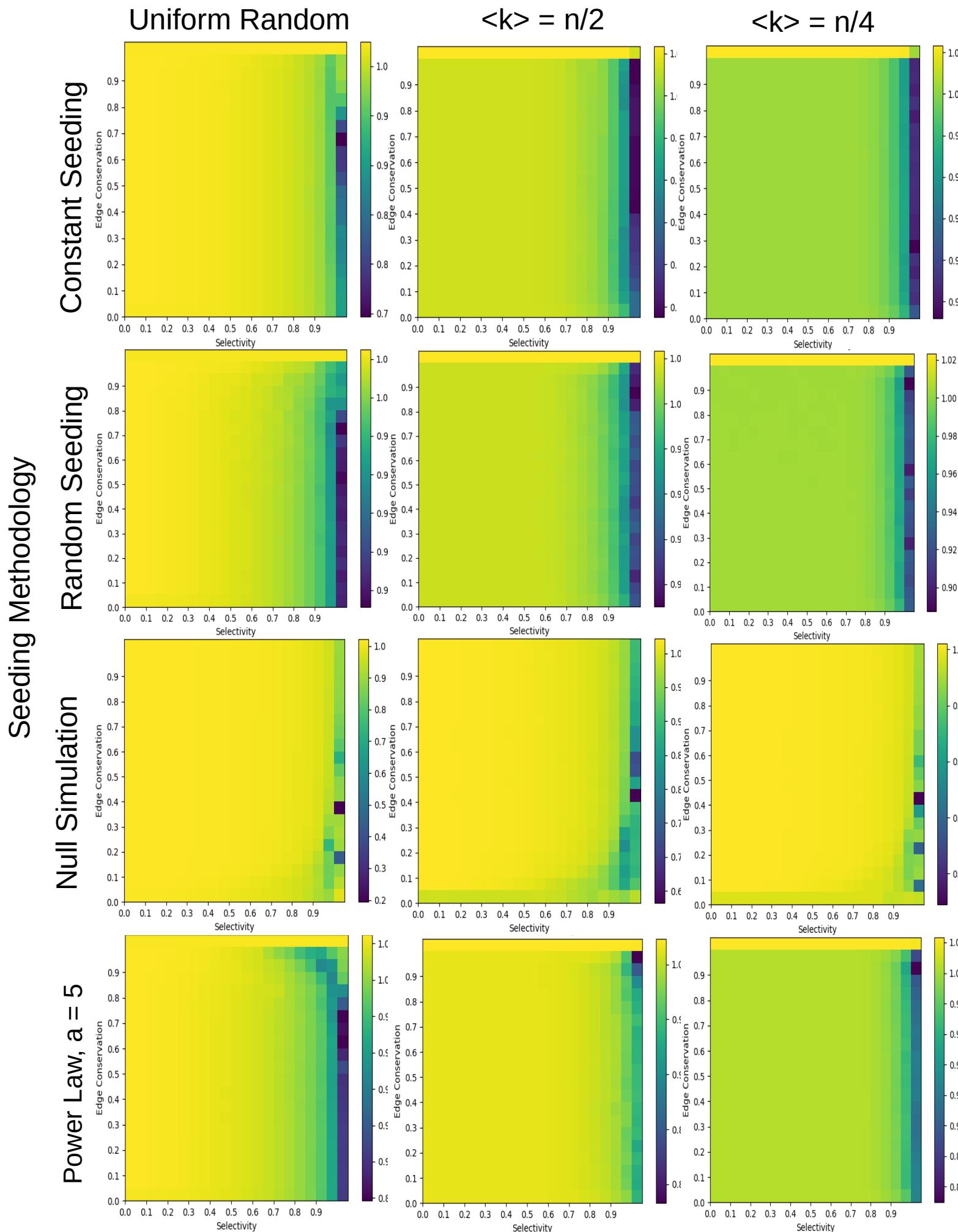
$$\text{Eff. Dist. Diff} = \text{ED}_{\text{final}} - \text{ED}_{\text{Initial}}$$

Average All to All Effective Distances Differences

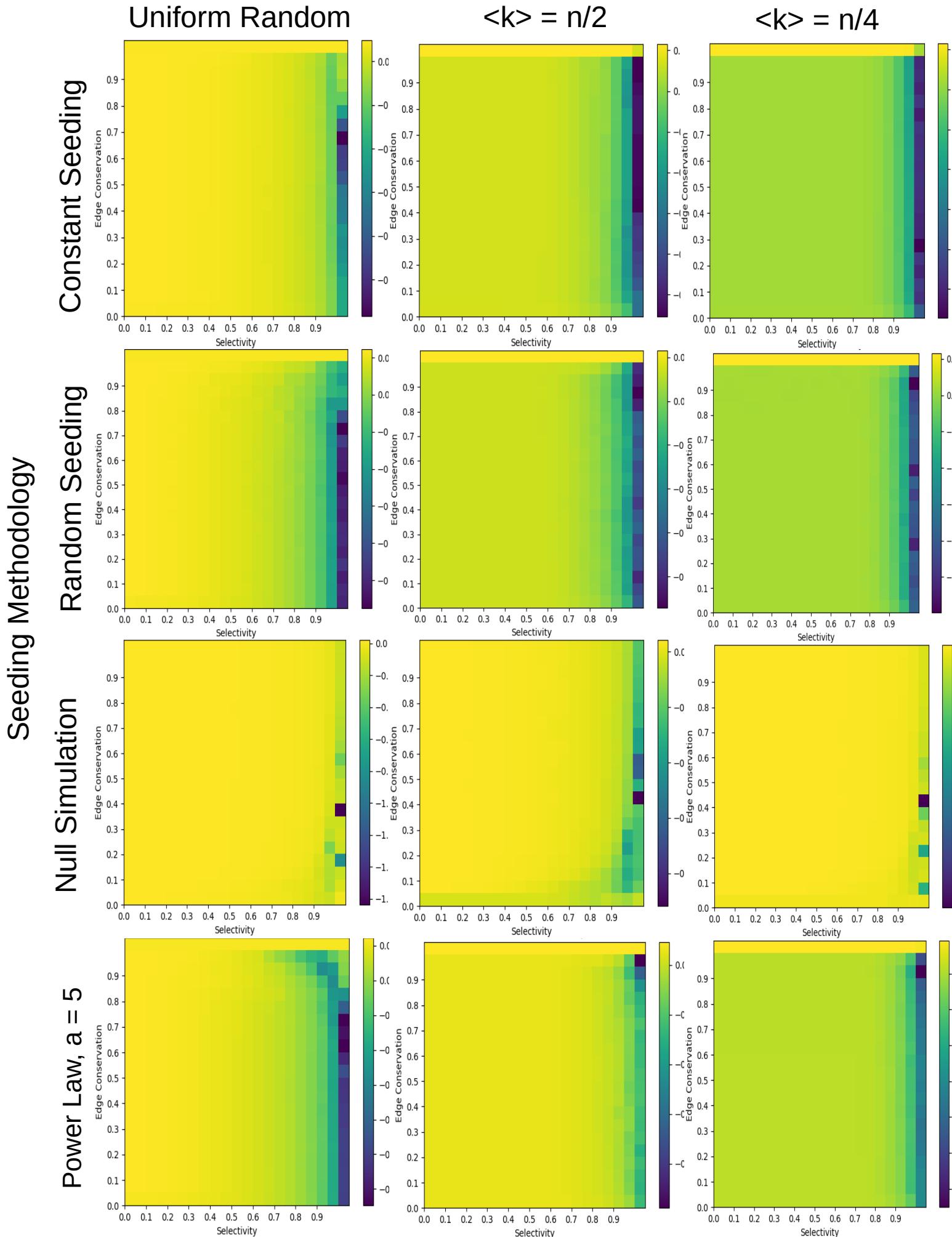
Network Structures



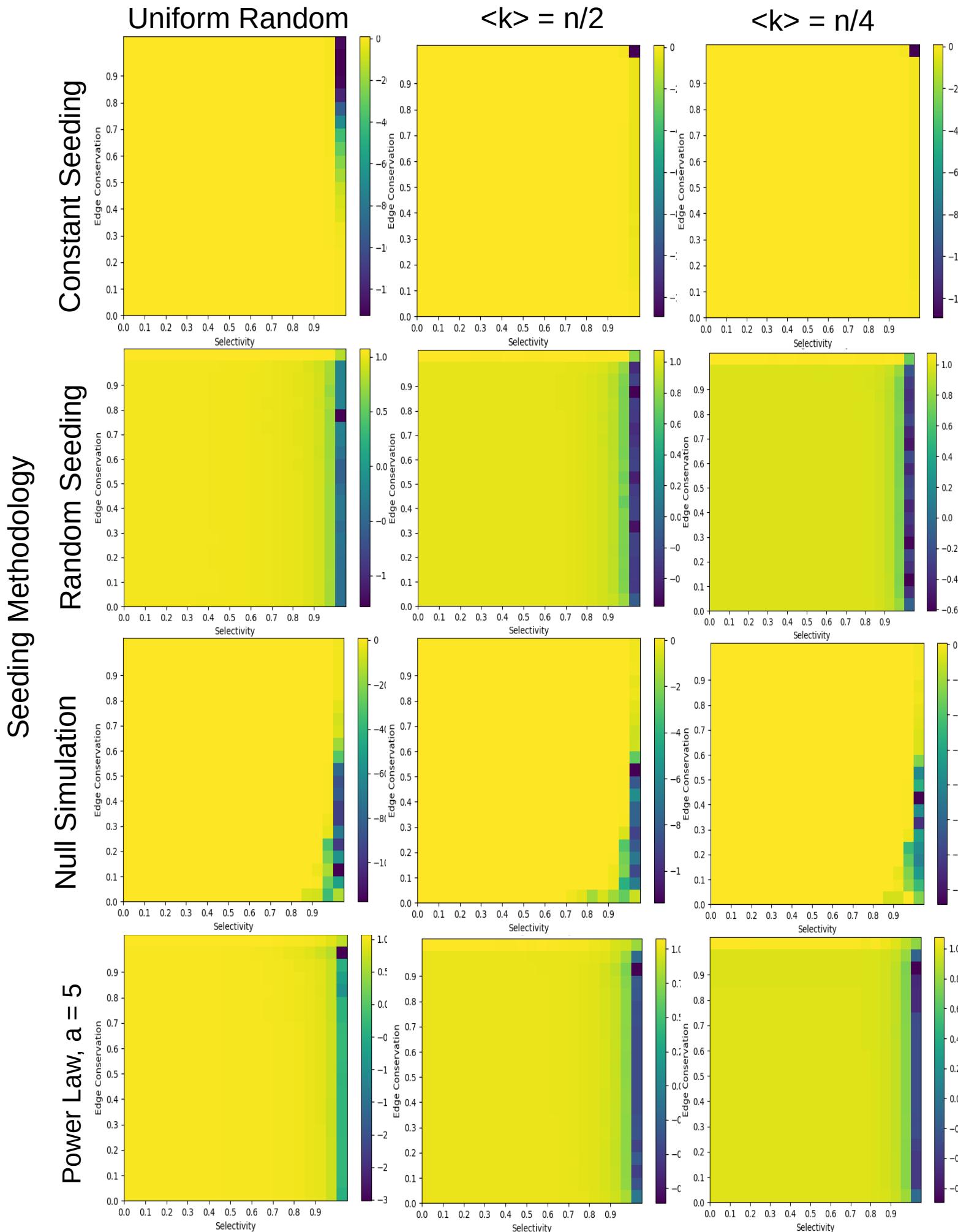
Diffusion Efficiencies (E_{Diff})



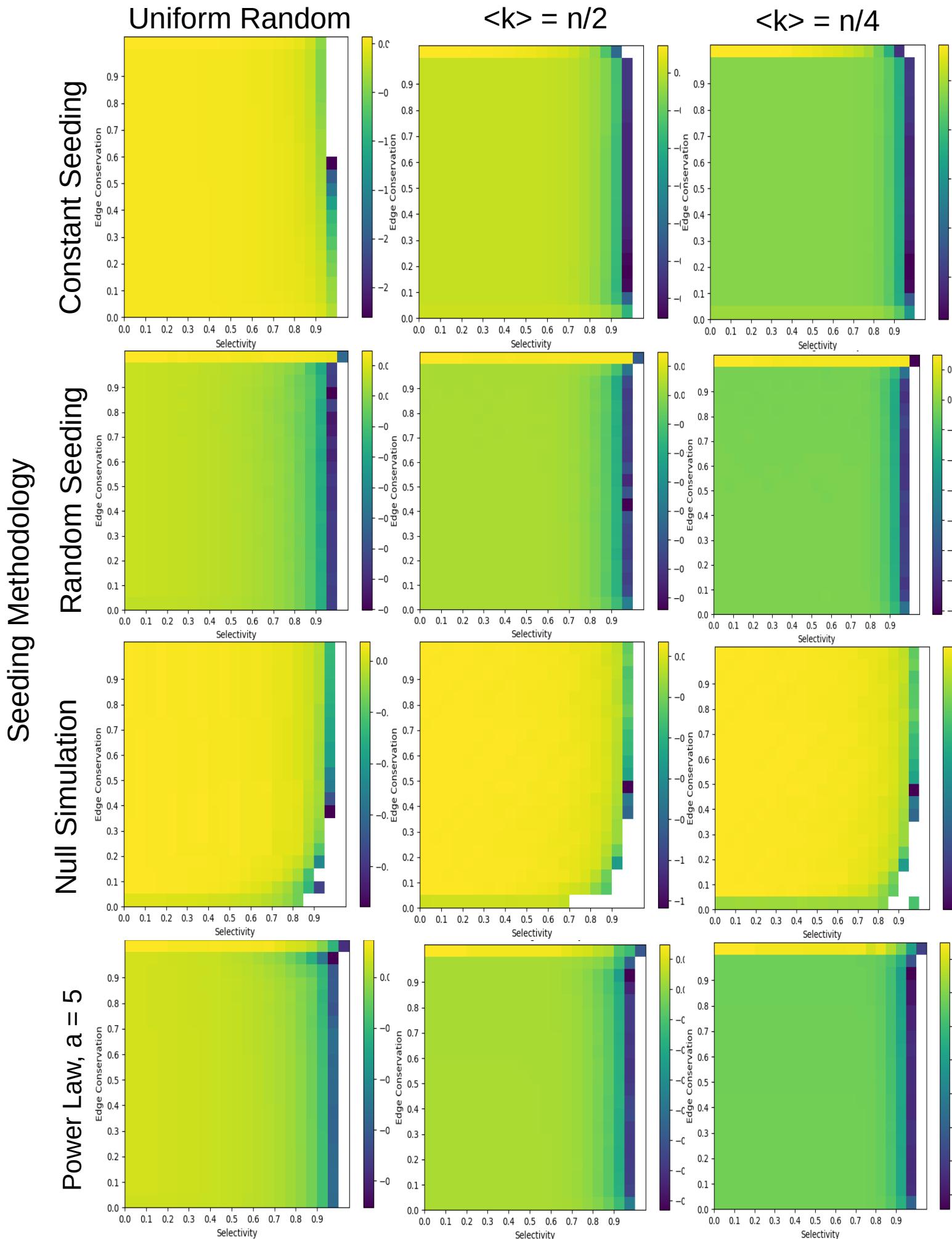
Log Diffusion Efficiencies (E_{Diff})



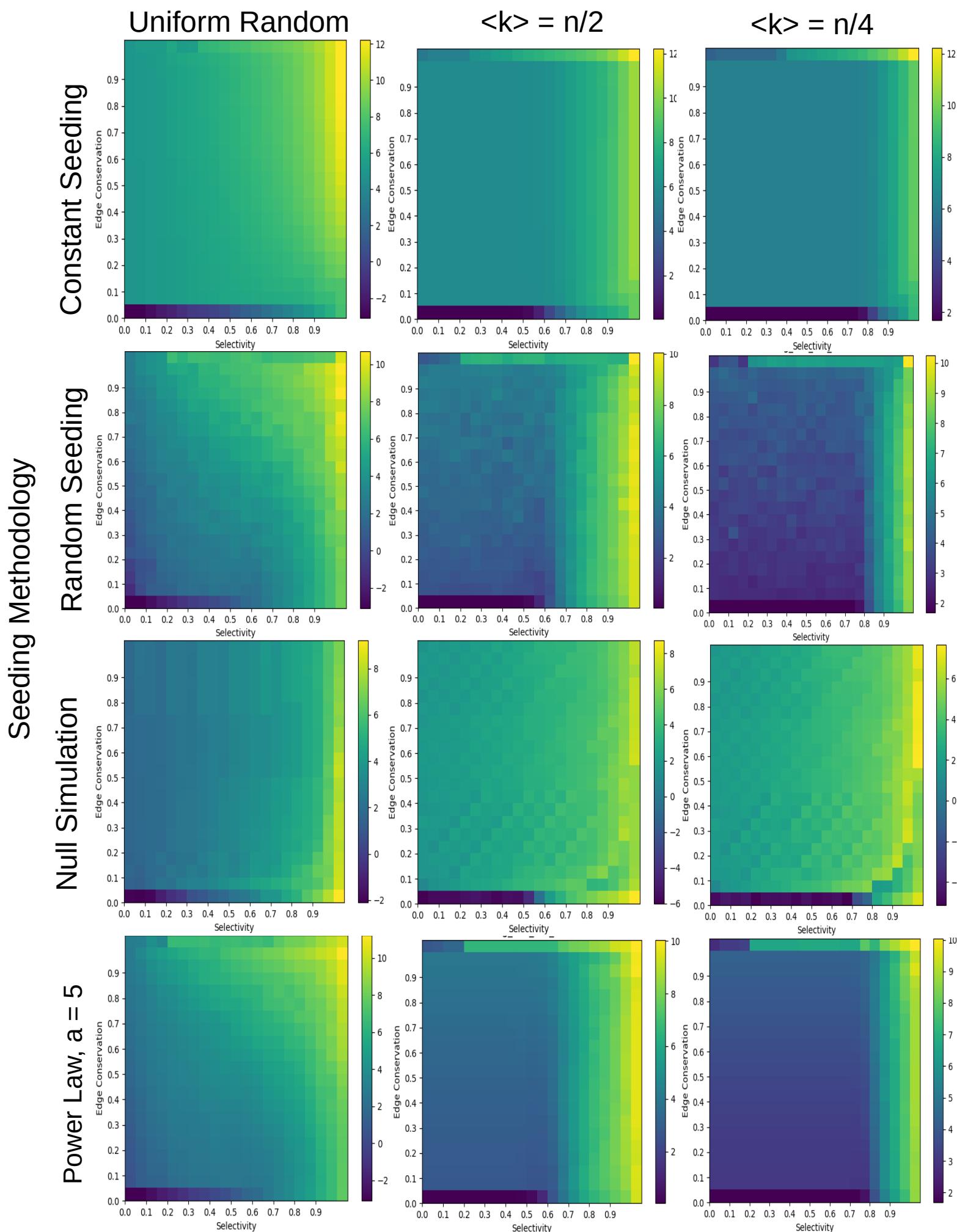
Routing Efficiencies (E_{Routing})



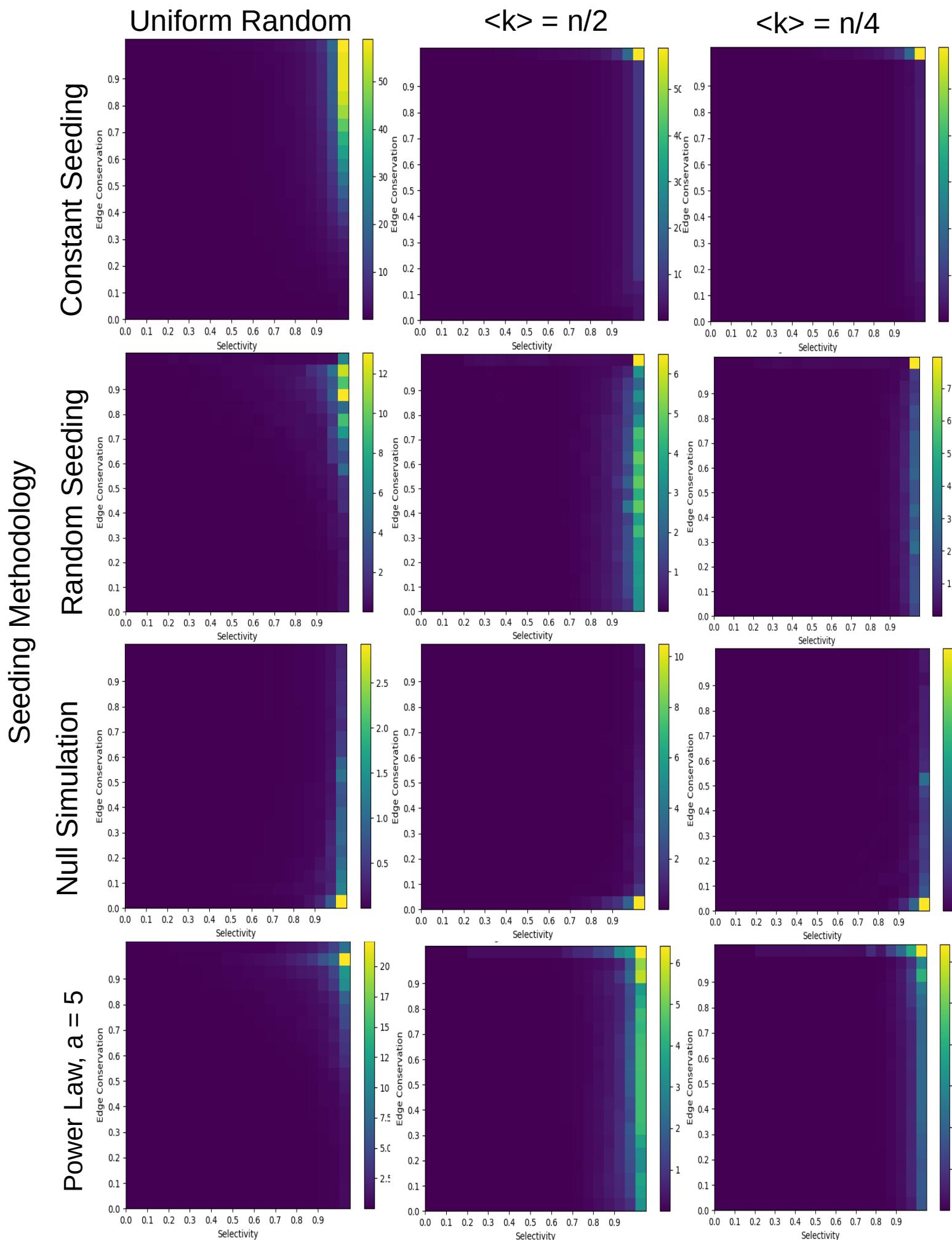
Log Routing Efficiencies (E_{Routing})



Log Average Neighbor Variance Network Structures



Log Average Degree Variance Network Structures



Hierarchy Coordinates

- As Initially developed in:
Hierarchy in complex networks: the possible and the actual [Corominas-Murtra et al.]
- Darker color points indicate higher selectivity/edge conservation values
- Adapted to weighted graphs by averaging over unweighted versions determined via exponentially or linearly distributed thresholds

Efficiency Morphospaces

- From Exploring the Morphospace of Communication Efficiency in Complex Networks [Goni et al. 2013]
- Adapted from unweighted to weighted graphs

Hierarchy Coordinates Linear Thresholds, Colored by Selectivity

Uniform Random

$\langle k \rangle = n/2$

$\langle k \rangle = n/4$

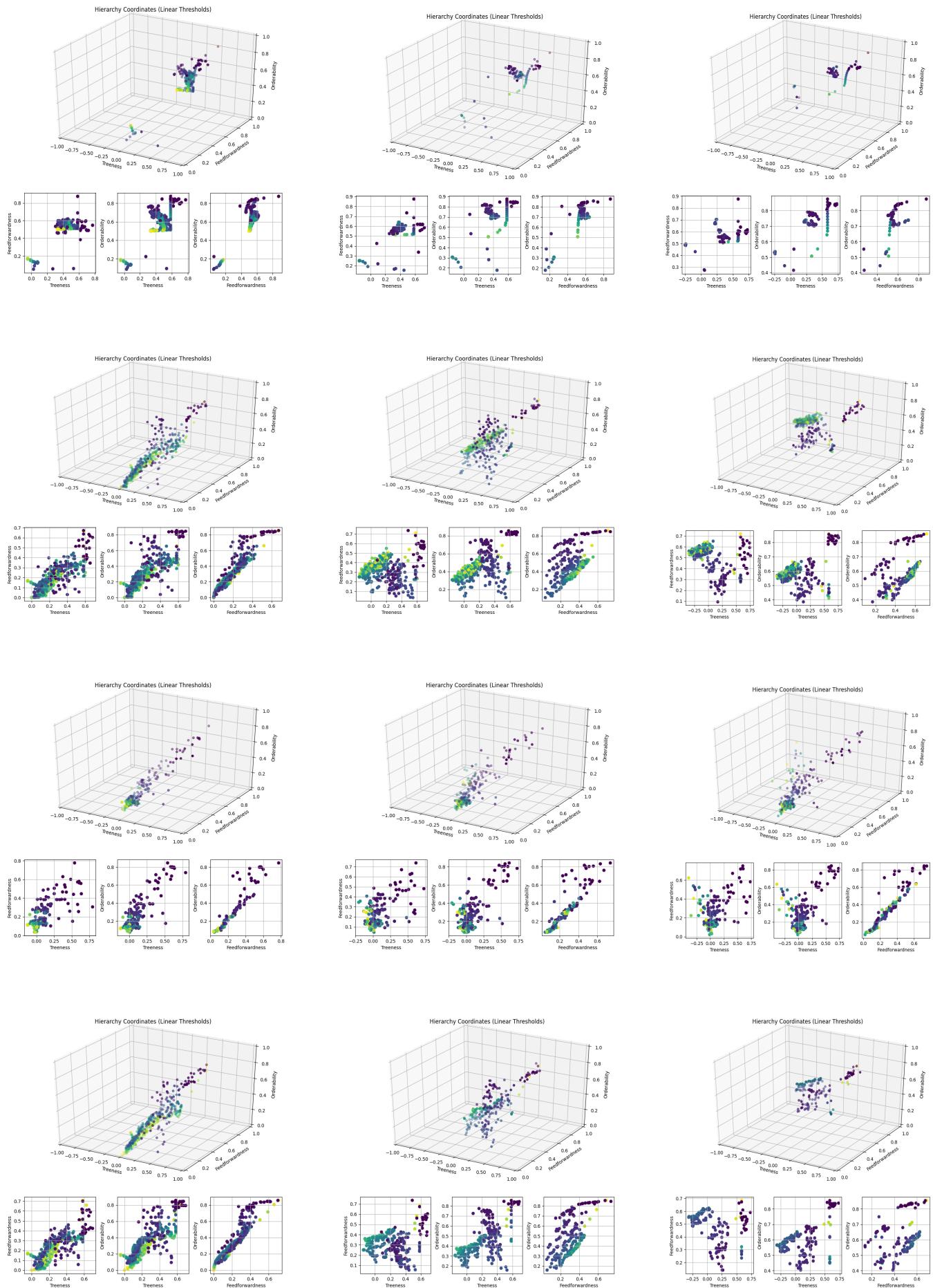
Seeding Methodology

Null Simulation

Random Seeding

Constant Seeding

Power Law, $\alpha = 5$



Hierarchy Coordinates Linear Thresholds, Colored by Edge Conservation

Uniform Random

$\langle k \rangle = n/2$

$\langle k \rangle = n/4$

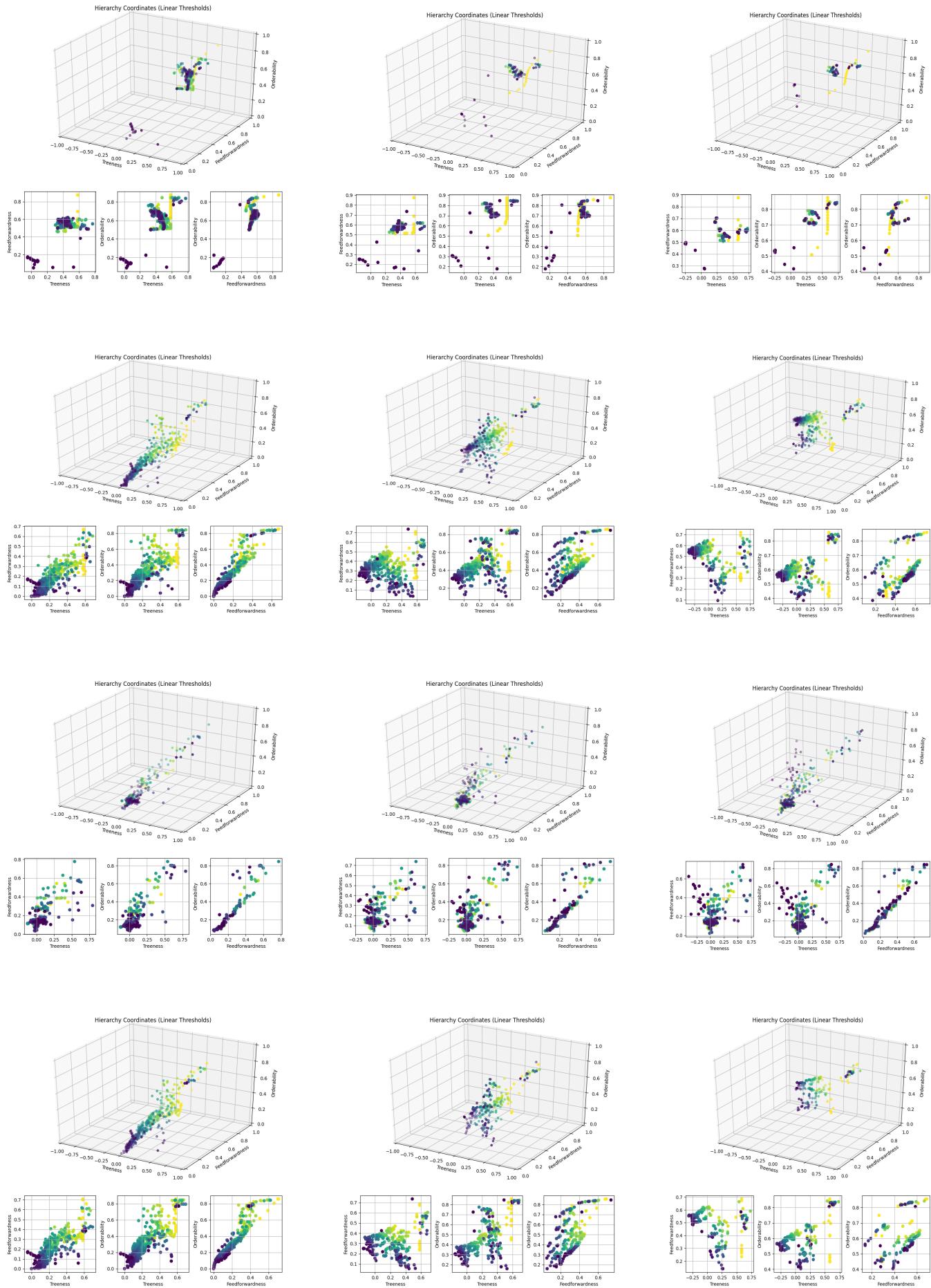
Seeding Methodology

Random Seeding

Null Simulation

Power Law, $\alpha = 5$

Constant Seeding



Hierarchy Coordinates Exponential Thresholds, Colored by Selectivity

Uniform Random

$\langle k \rangle = n/2$

$\langle k \rangle = n/4$

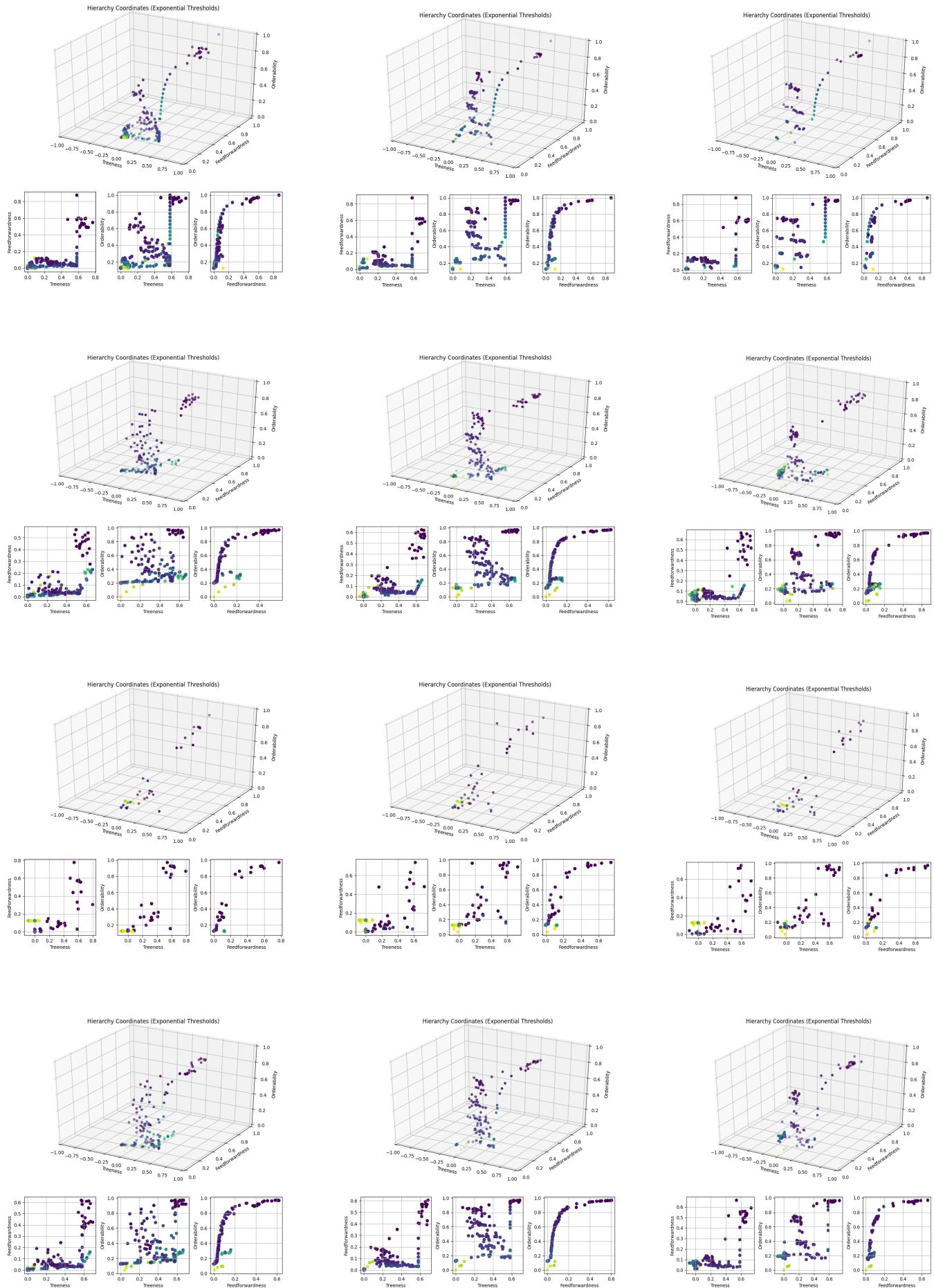
Seeding Methodology

Random Seeding

Null Simulation

Power Law, $\alpha = 5$

Constant Seeding



Hierarchy Coordinates

Exponential Thresholds, Colored by Edge Conservation

Uniform Random

$\langle k \rangle = n/2$

$\langle k \rangle = n/4$

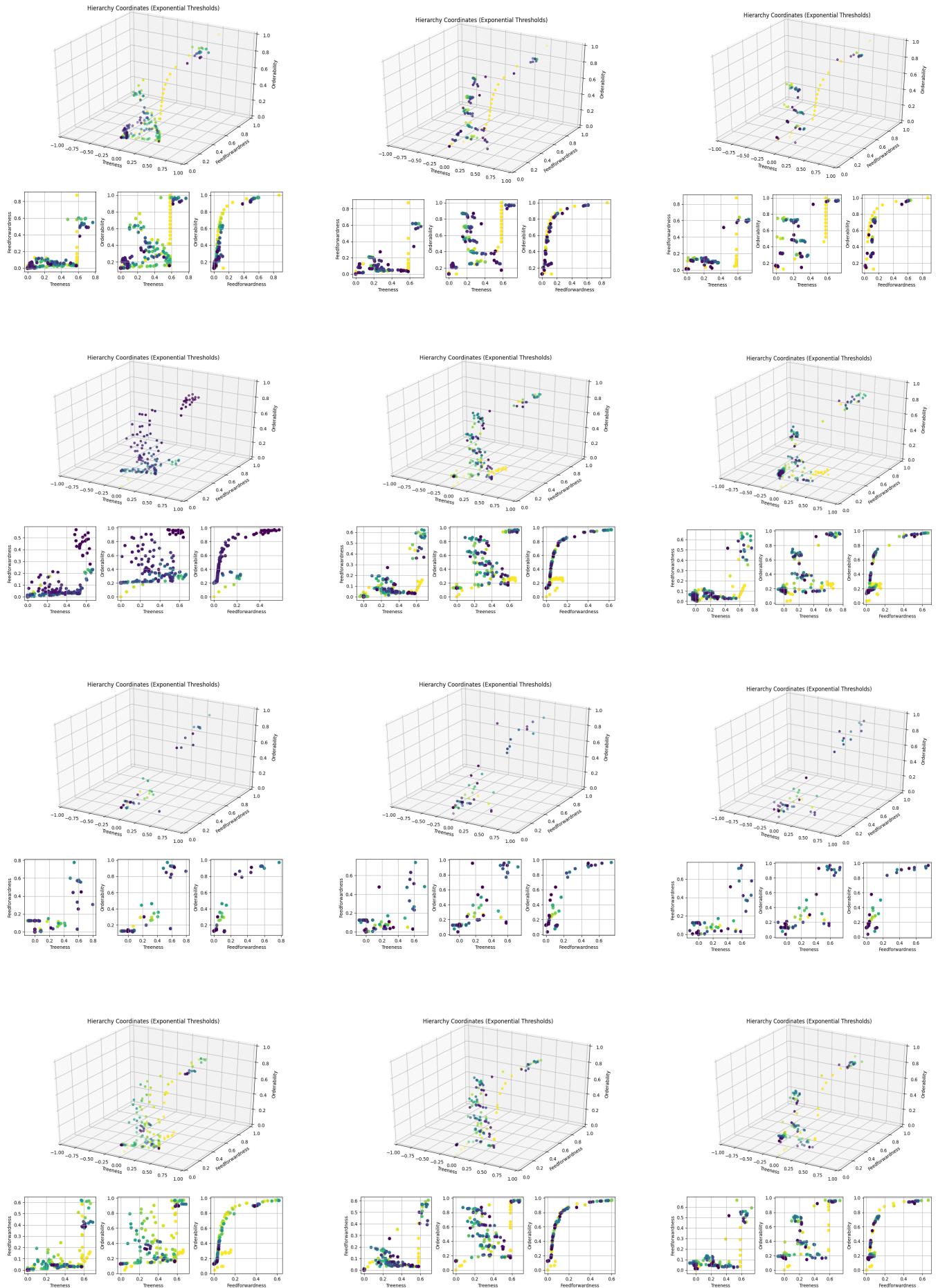
Seeding Methodology

Random Seeding

Null Simulation

Power Law, $\alpha = 5$

Constant Seeding



Efficiency Coordinates

Complete Efficiency Morphospace Colored By Selectivity

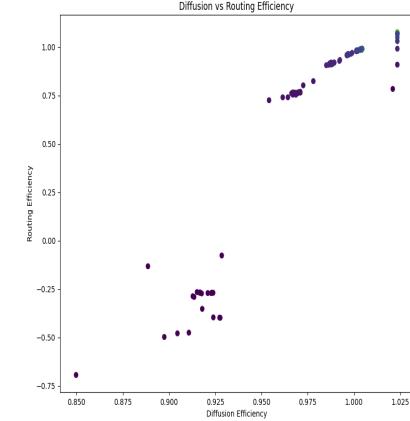
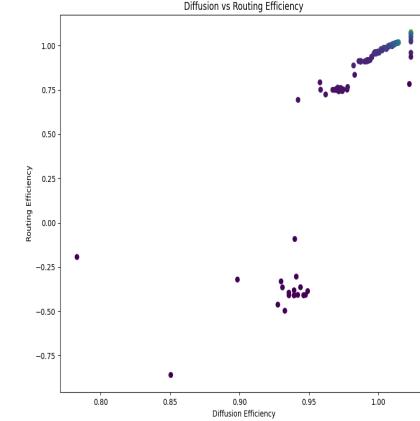
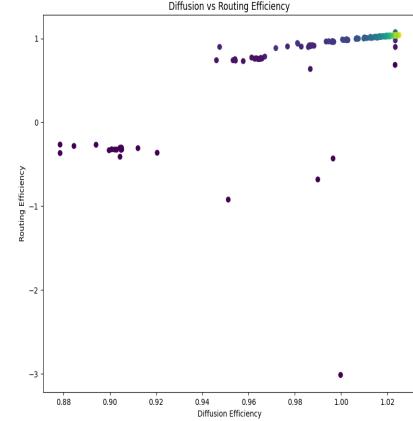
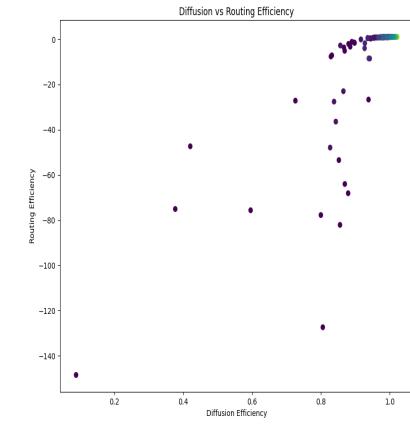
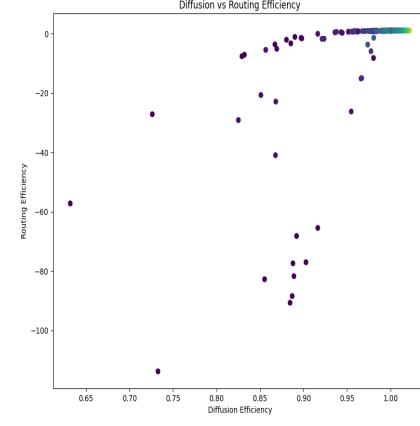
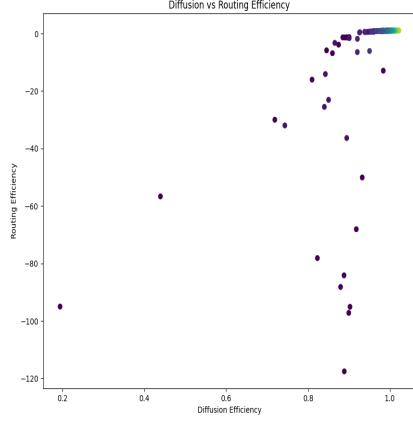
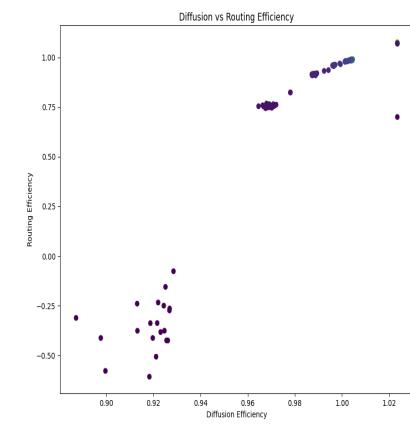
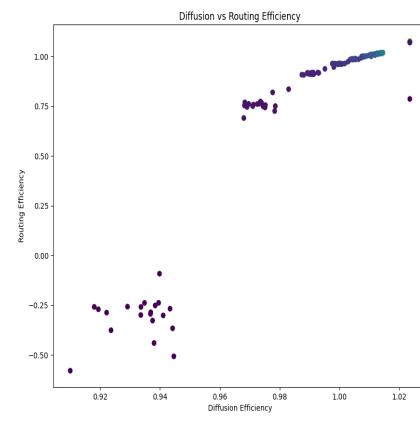
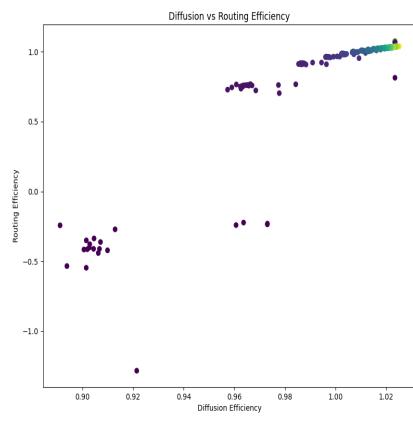
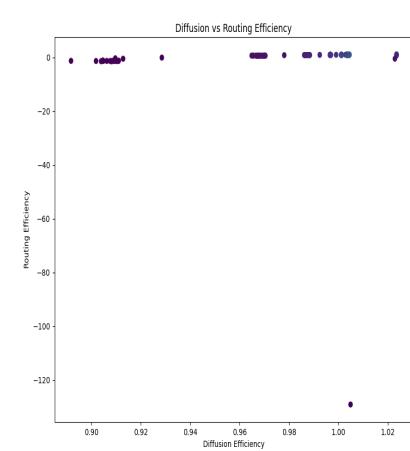
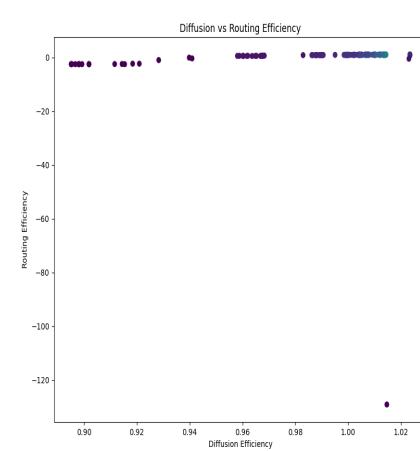
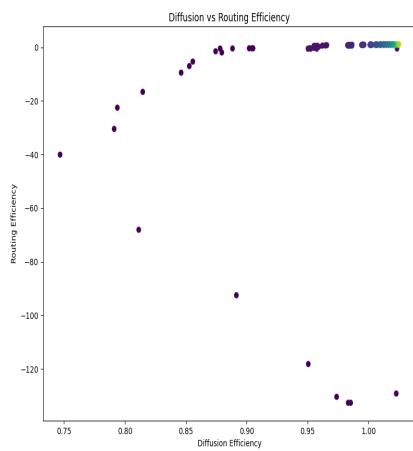
Uniform Random

$\langle k \rangle = n/2$

$\langle k \rangle = n/4$

Seeding Methodology

Constant Seeding



Complete Efficiency Morphospace Colored By Edge Conservation

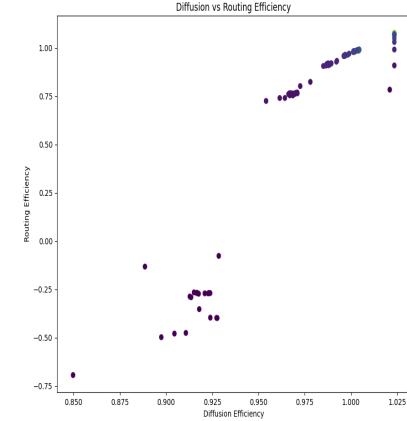
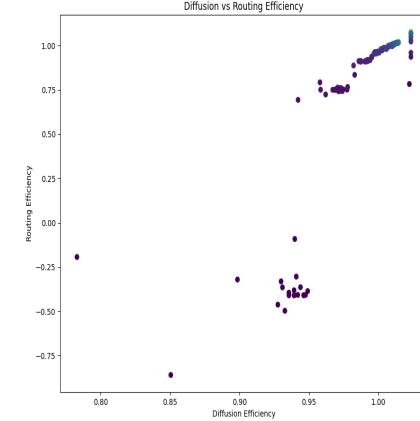
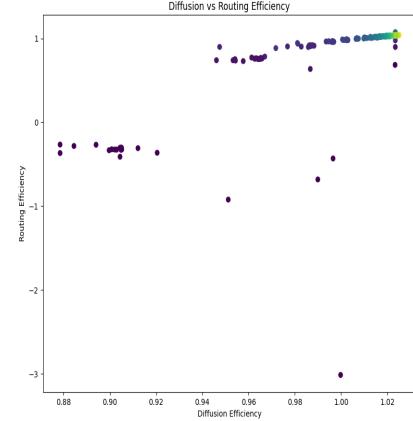
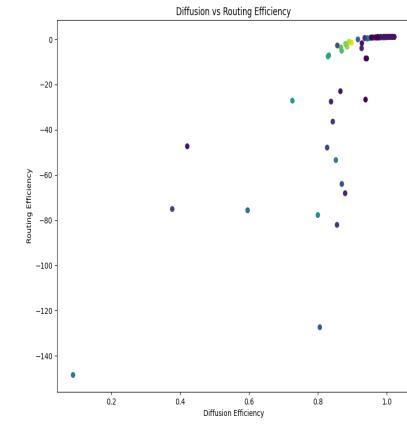
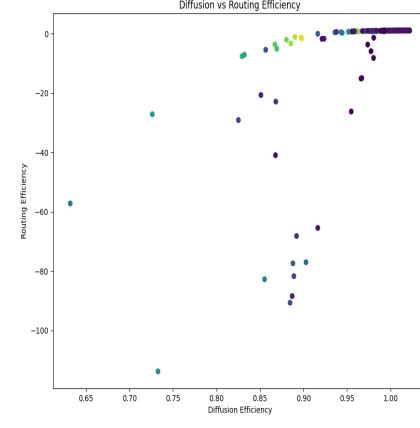
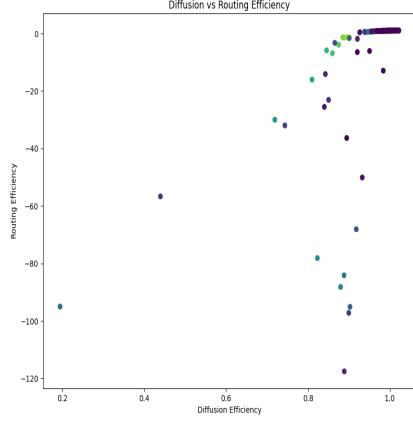
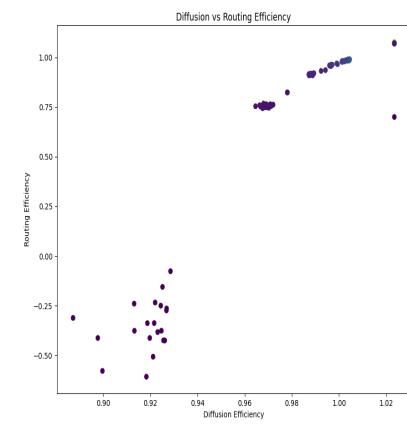
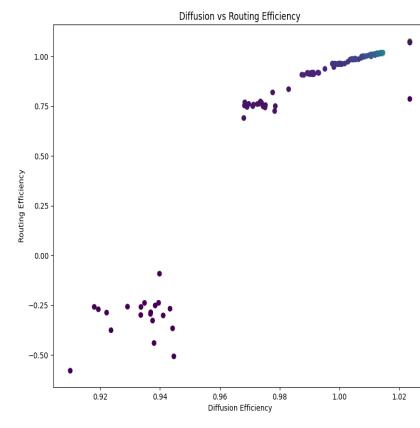
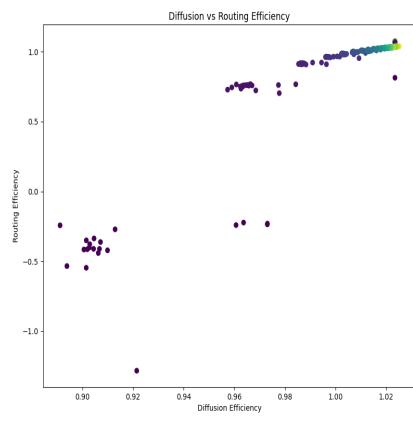
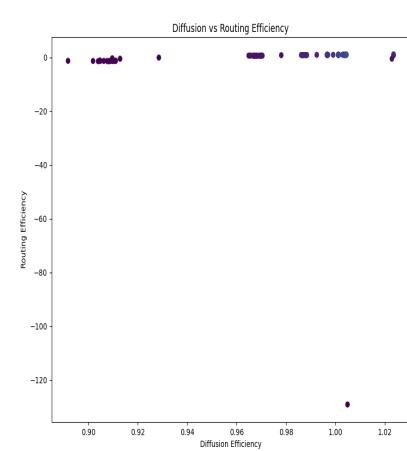
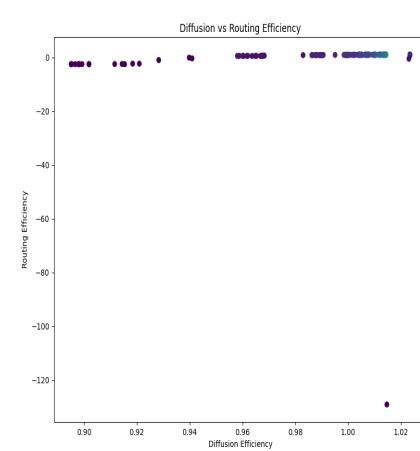
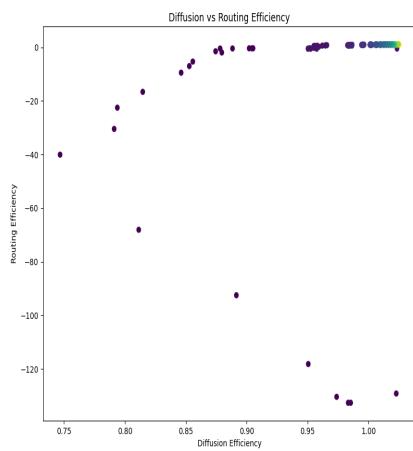
Uniform Random

$\langle k \rangle = n/2$

$\langle k \rangle = n/4$

Seeding Methodology

Constant Seeding



Efficiency Morphospace (Around 1, 1) Colored By Selectivity

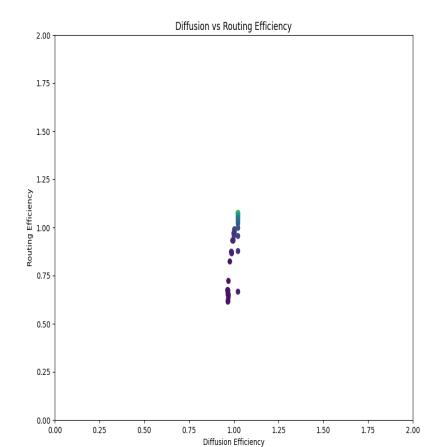
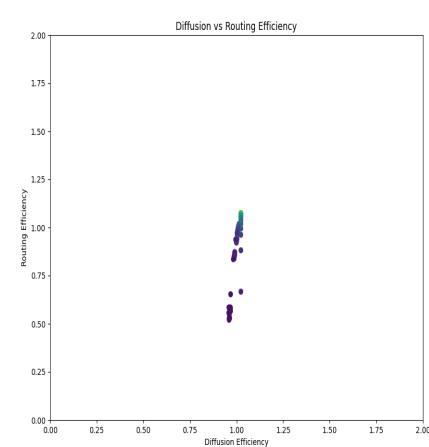
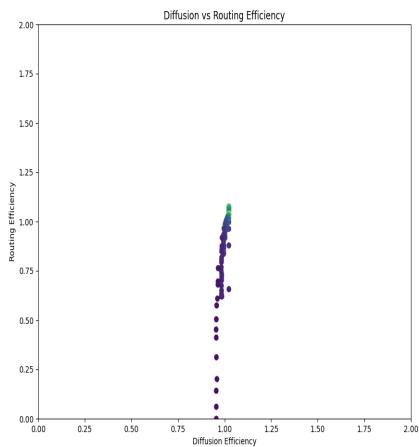
Uniform Random

$\langle k \rangle = n/2$

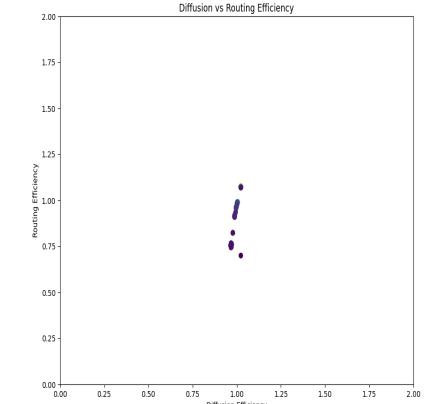
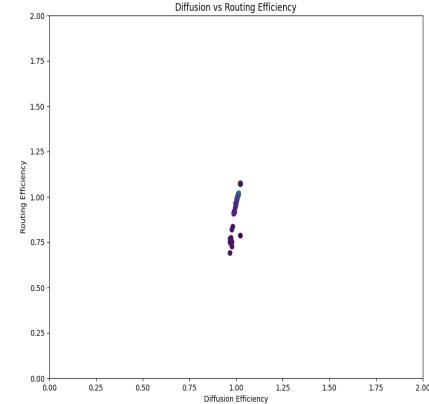
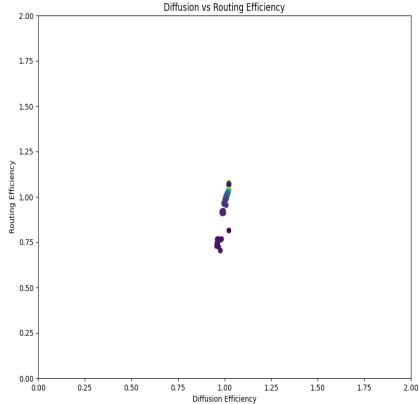
$\langle k \rangle = n/4$

Seeding Methodology

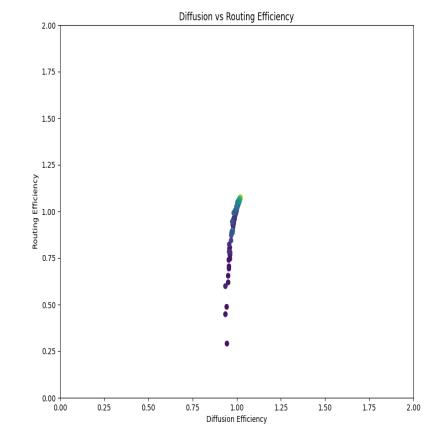
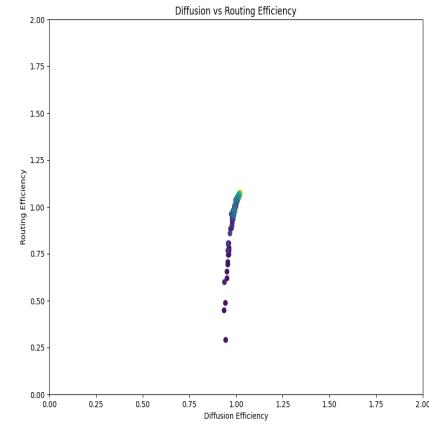
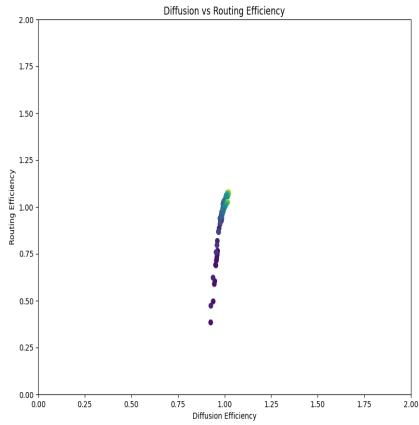
Constant Seeding



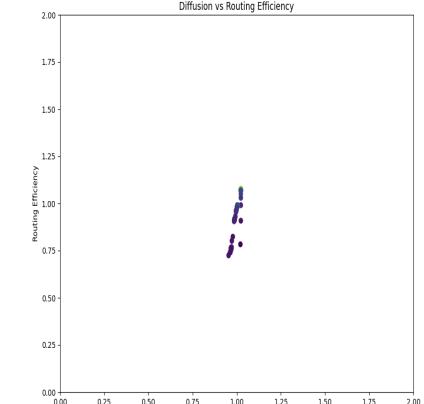
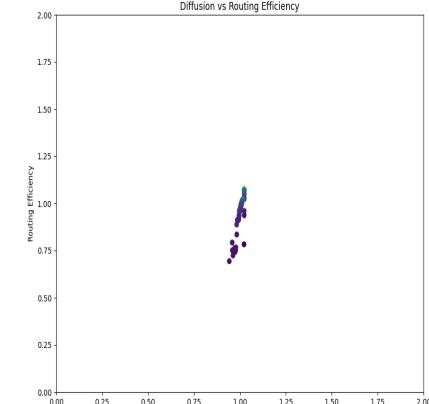
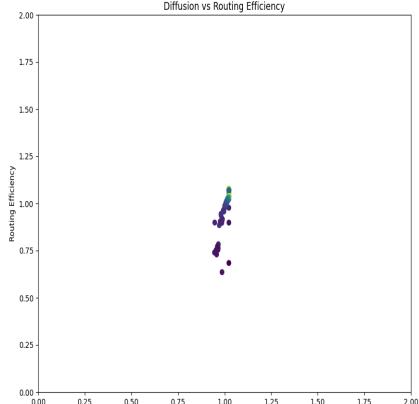
Random Seeding



Null Simulation



Power Law, $\alpha = 5$



Efficiency Morphospace (Around 1, 1) Colored via Edge Conservation

Uniform Random

$\langle k \rangle = n/2$

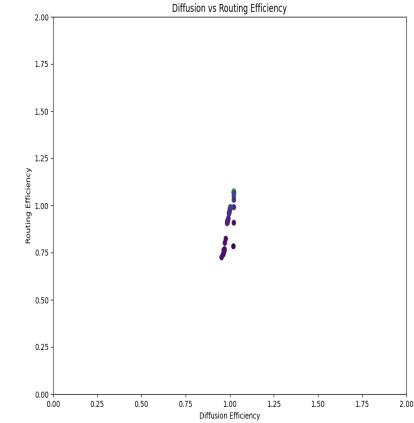
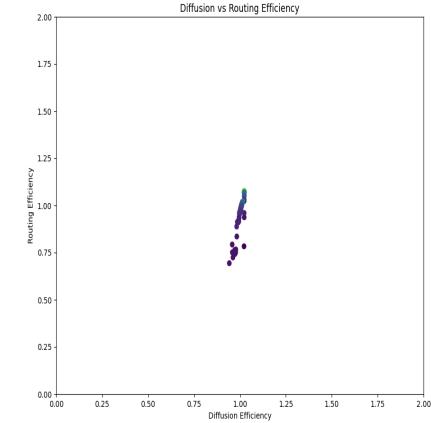
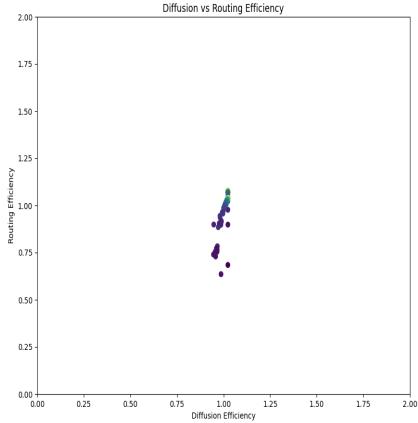
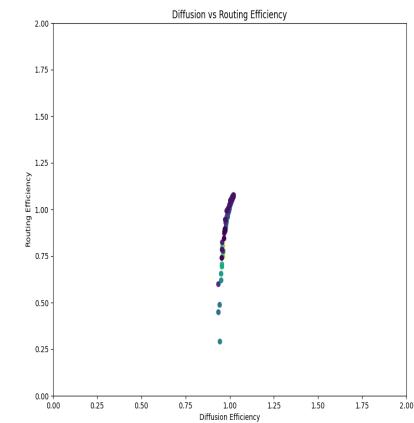
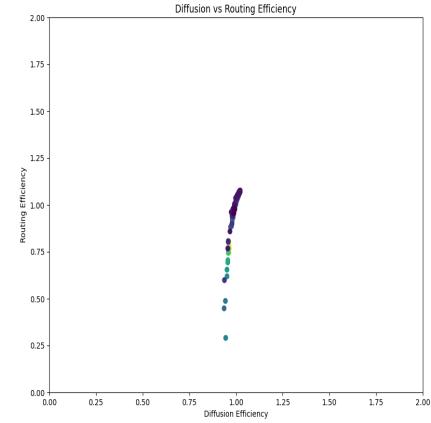
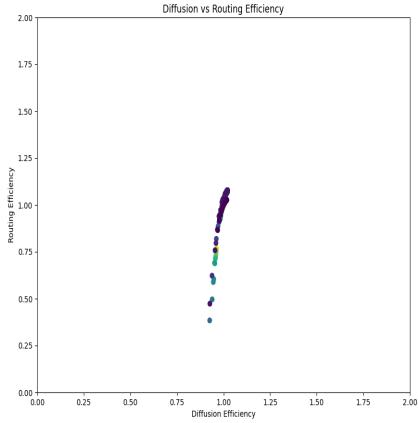
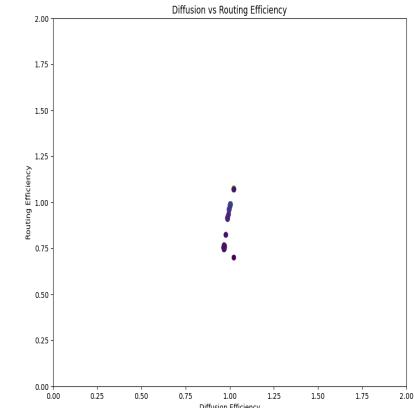
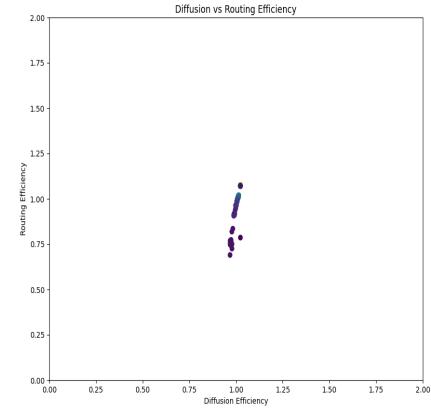
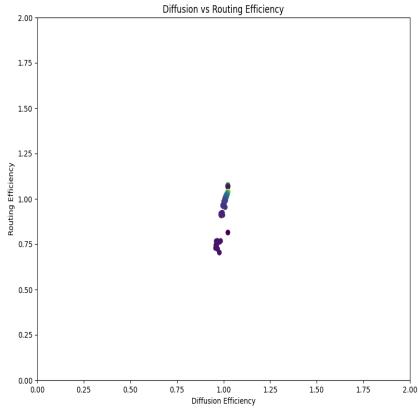
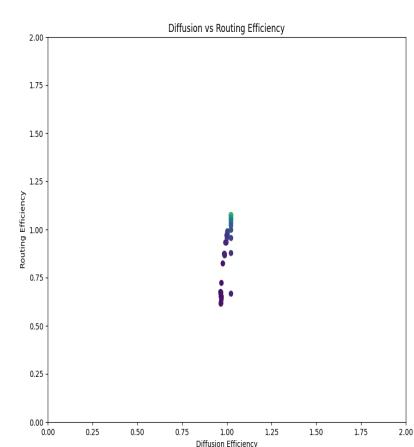
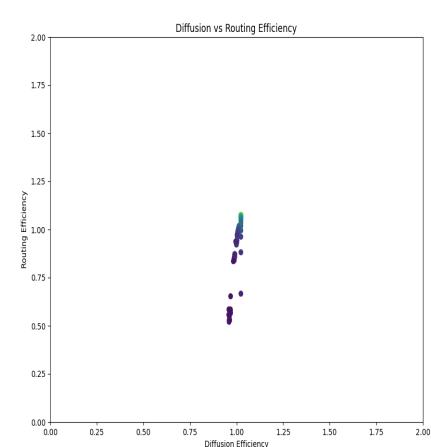
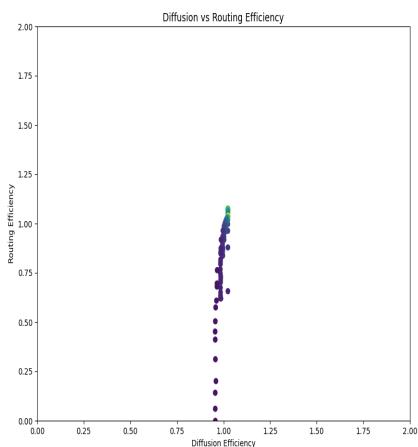
$\langle k \rangle = n/4$

Seeding Methodology

Null Simulation

Constant Seeding

Power Law, $\alpha = 5$



Efficiency Morphospace (outliers minimized; variable space)

Colored Via Selectivity

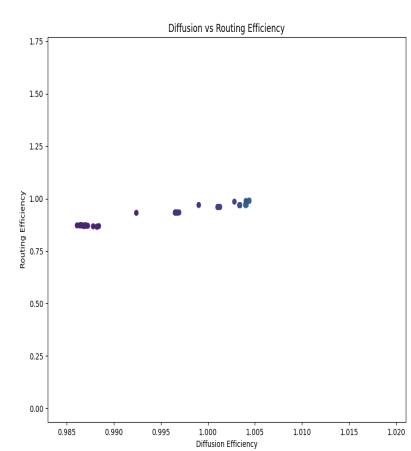
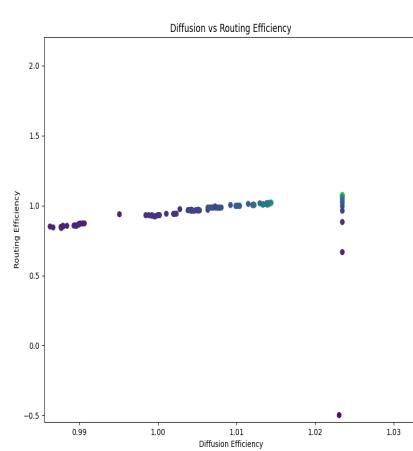
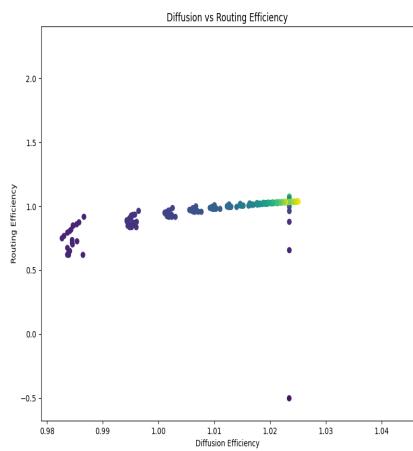
Uniform Random

$\langle k \rangle = n/2$

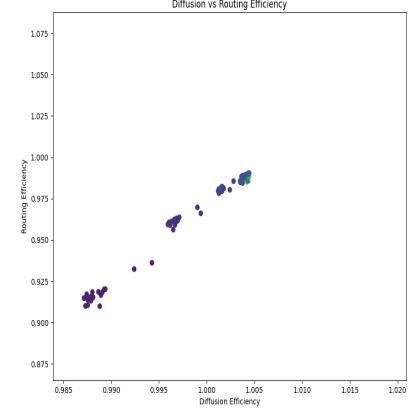
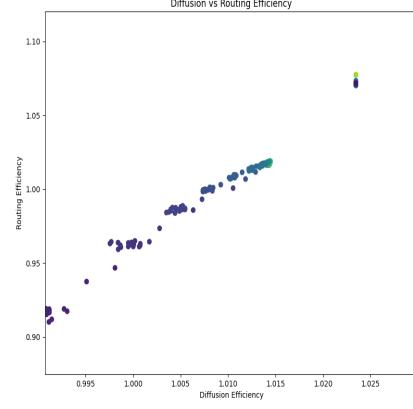
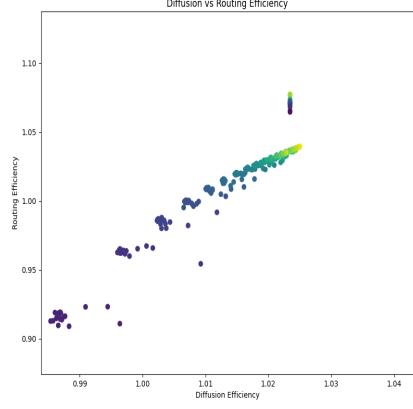
$\langle k \rangle = n/4$

Seeding Methodology

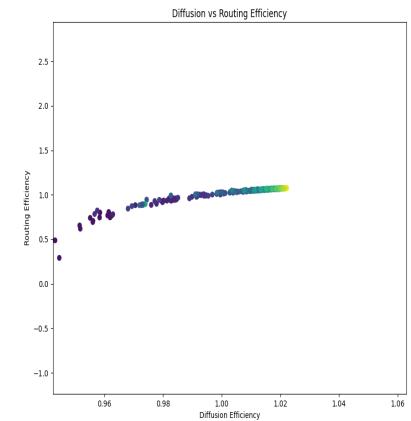
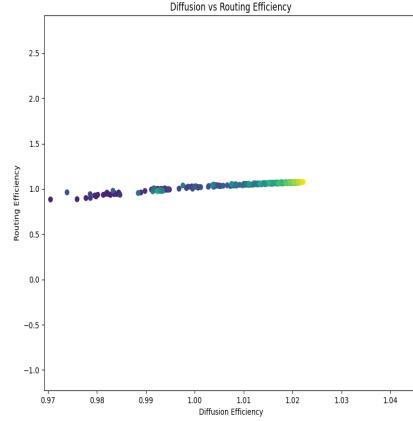
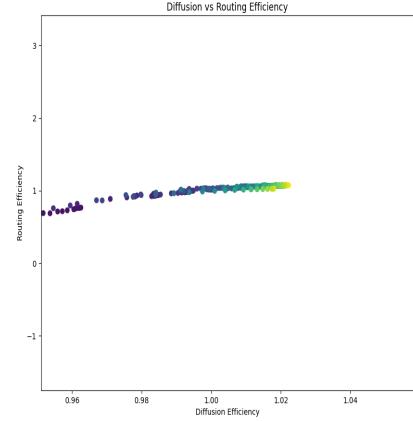
Constant Seeding



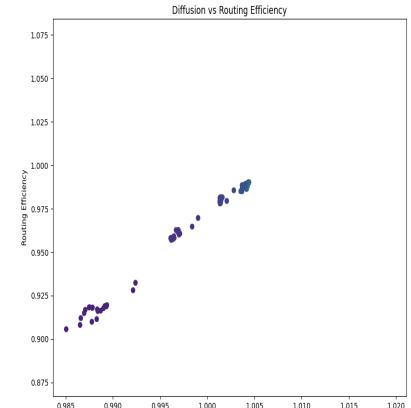
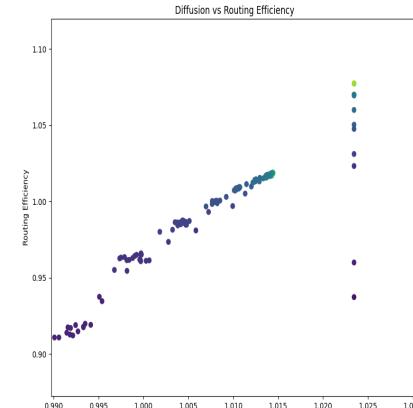
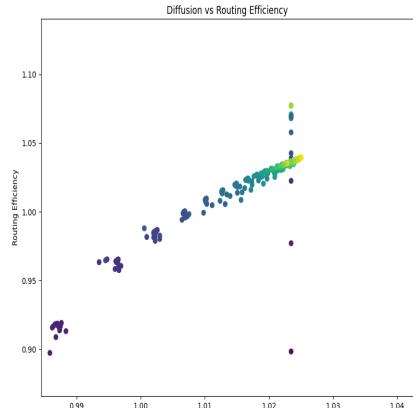
Random Seeding



Null Simulation



Power Law, $\alpha = 5$



Efficiency Morphospace (outliers minimized; variable space) Colored Via Edge Conservation

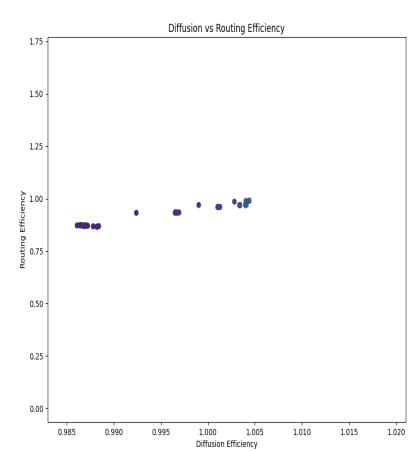
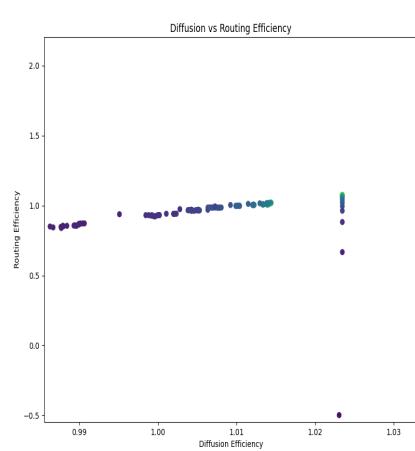
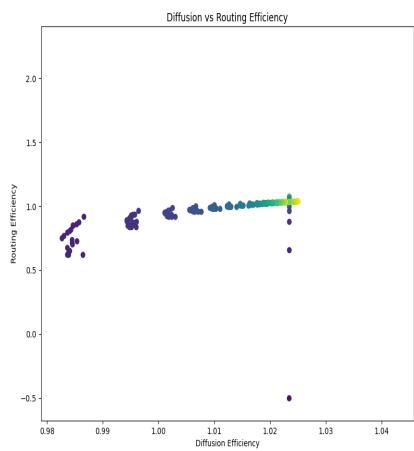
Uniform Random

$\langle k \rangle = n/2$

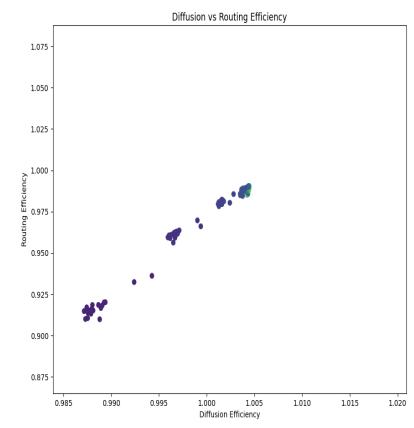
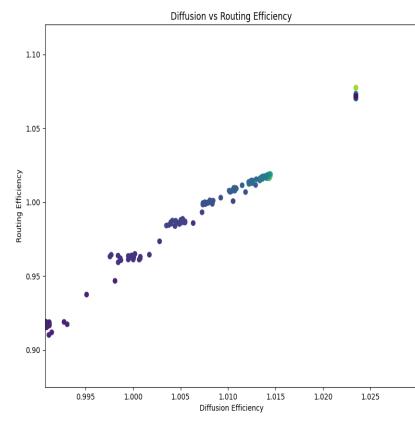
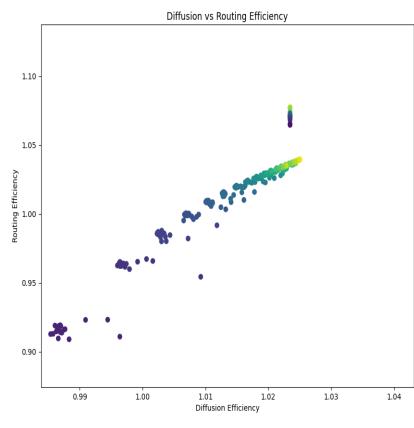
$\langle k \rangle = n/4$

Seeding Methodology

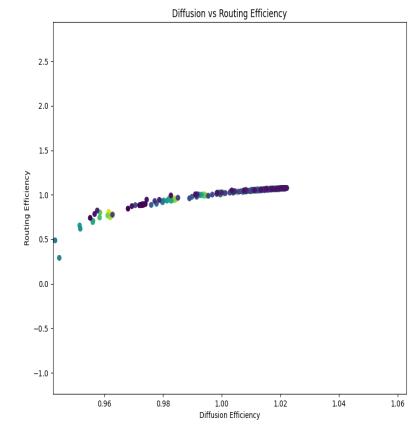
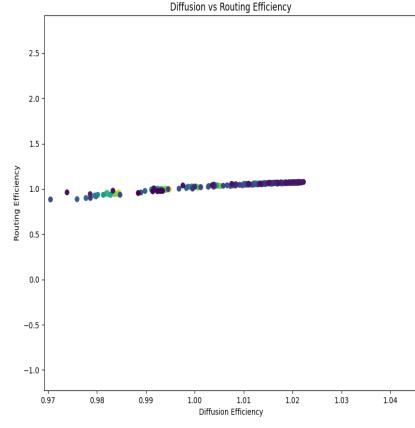
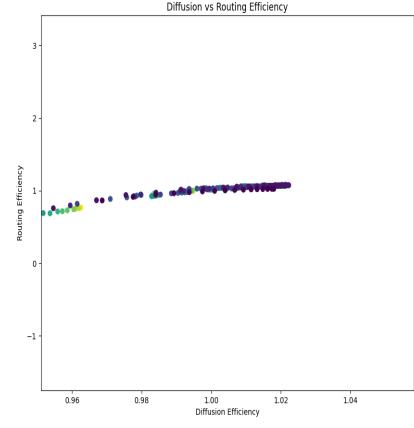
Constant Seeding



Random Seeding



Null Simulation



Power Law, $\alpha = 5$

