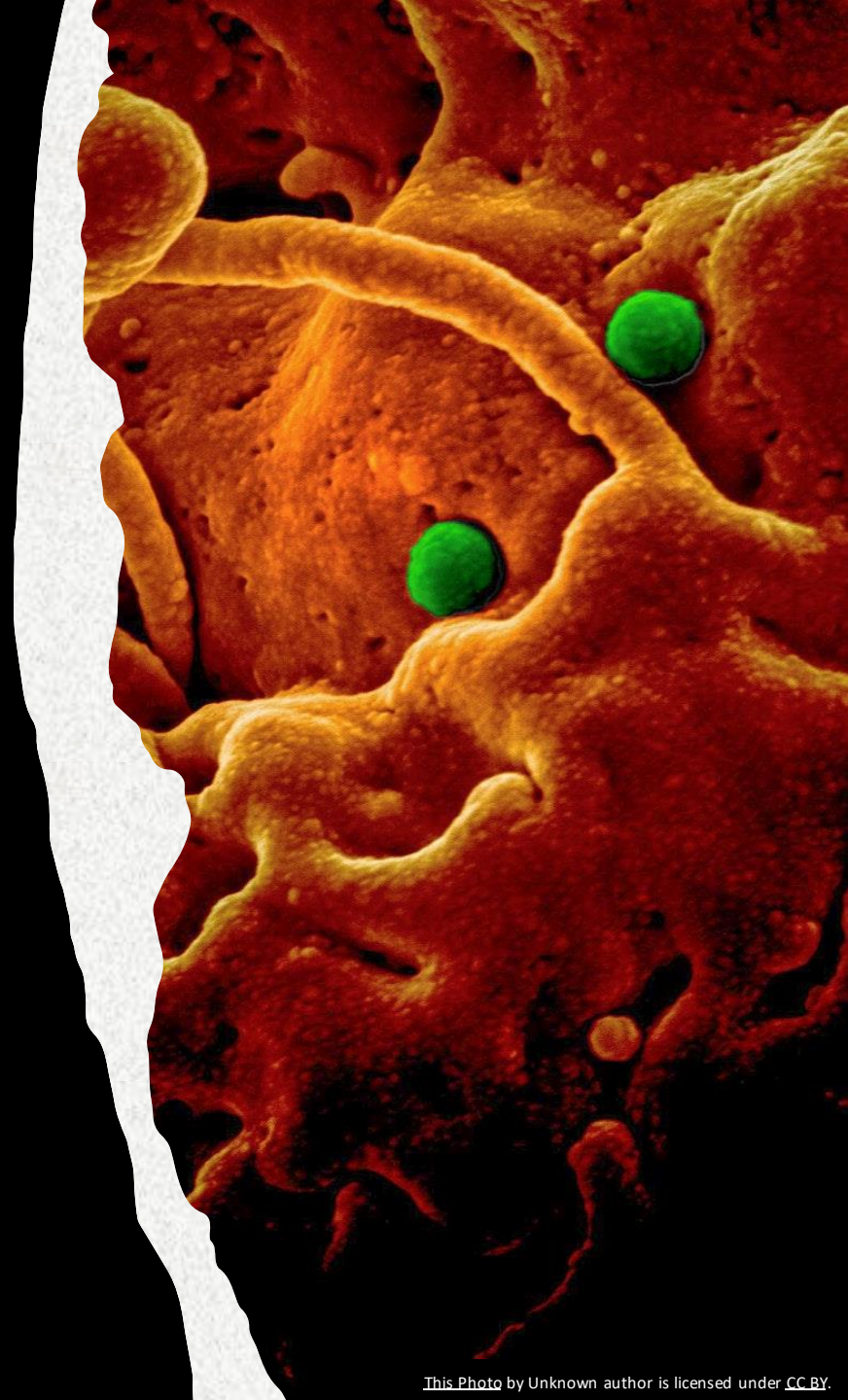
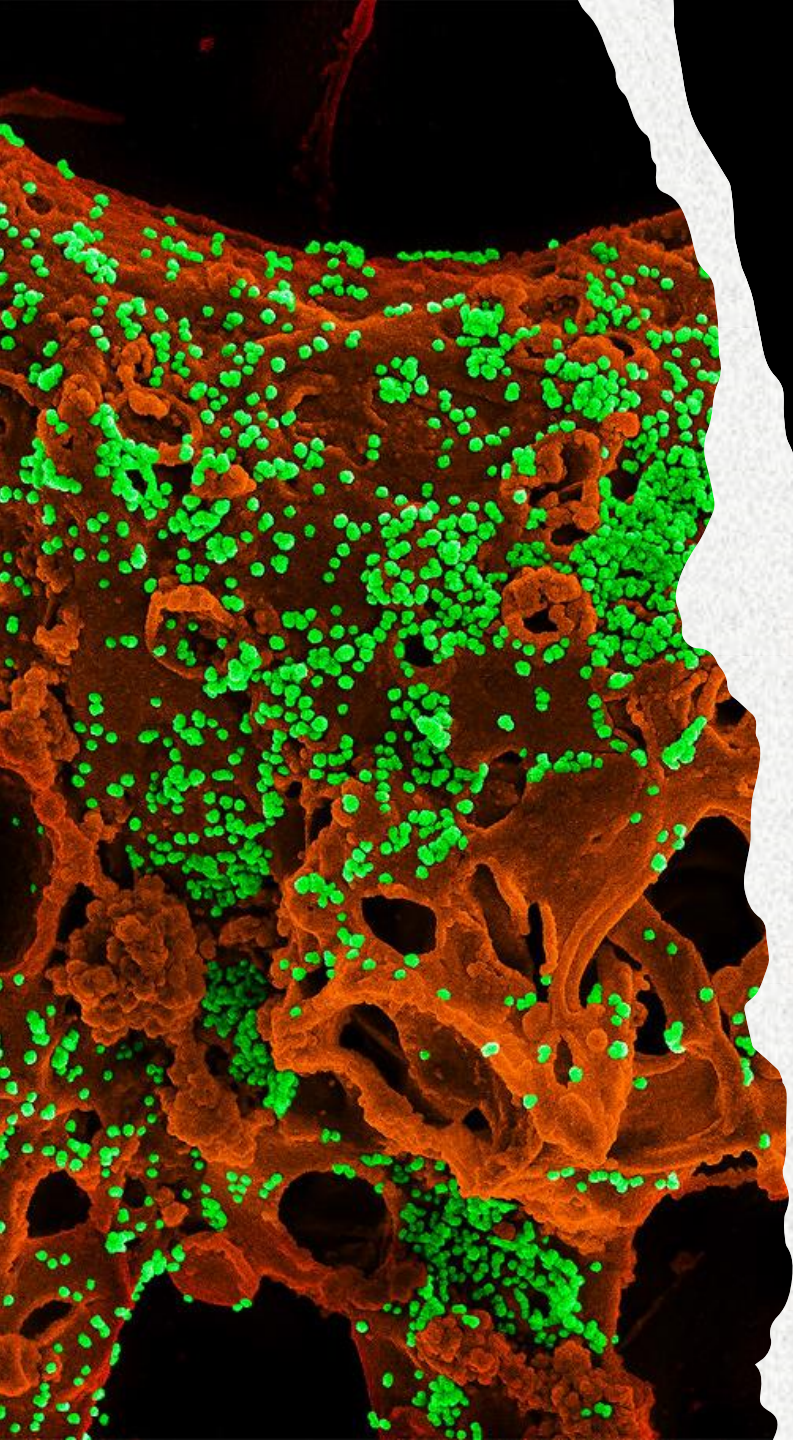



MERS





MERS Outbreaks

- Saudi Arabia
2046 Total number of cases
 - South Korea
186 Total number of cases
- 

MERS in Saudi Arabia

- Spread of the disease was not only due to person-to-person contacts

MERS Conflict

- The Basic Reproductive Number (R_0)

Contact Network

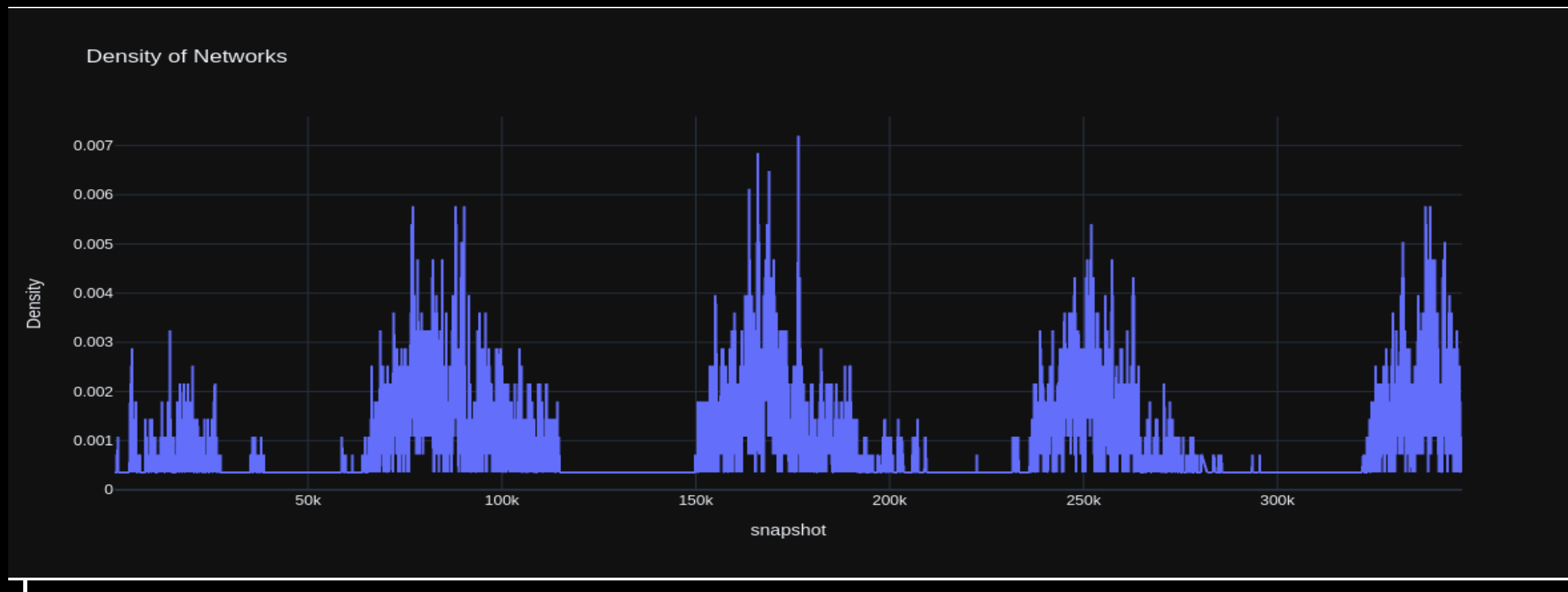
- Contact information of Individuals in an emergency section of a hospital during 4 consecutive days
- Total number of People : 75
- Variety of individual's status : Patients, Doctors, Nurses, Nurses aids, and Administrative staffs
- Time interval of snapshots : 20 secs

Network Features

snapshot	Density	Nodes(ID)	Degree	PageRank
159820	0.0025	1159	1	0.13
74140	0.0011	1164	1	0.17
169440	0.0022	1210	1	0.08
338680	0.0014	1295	1	0.17
235860	0.0004	1485	1	0.50
331760	0.0029	1190	1	0.06
77840	0.0011	1245	1	0.17
97940	0.0014	1210	1	0.14
250980	0.0018	1164	1	0.11
205980	0.0011	1391	2	0.33



Contact Network





SIR Simulation

- Seed : Represents the ID of Individuals
- Selective seeds : Represent the individuals selected based on their characteristic features in the network
- Duration of recovery : 7 days on average
- Recovery rate : 0.000033 (per 20s)
- Transmissibility rate : 0.1



SIR Simulation

seed	status	total	max_prev
1115	NUR	66	26
1164	NUR	63	21
1365	PAT	63	18
1144	MED	62	19
1210	NUR	61	31
1193	NUR	58	21
1157	MED	55	21
1105	NUR	54	18
1295	NUR	54	18
1207	NUR	53	27
1109	NUR	39	22
1149	NUR	2	2
1148	MED	1	1
1629	NUR	1	1
1658	ADM	1	1



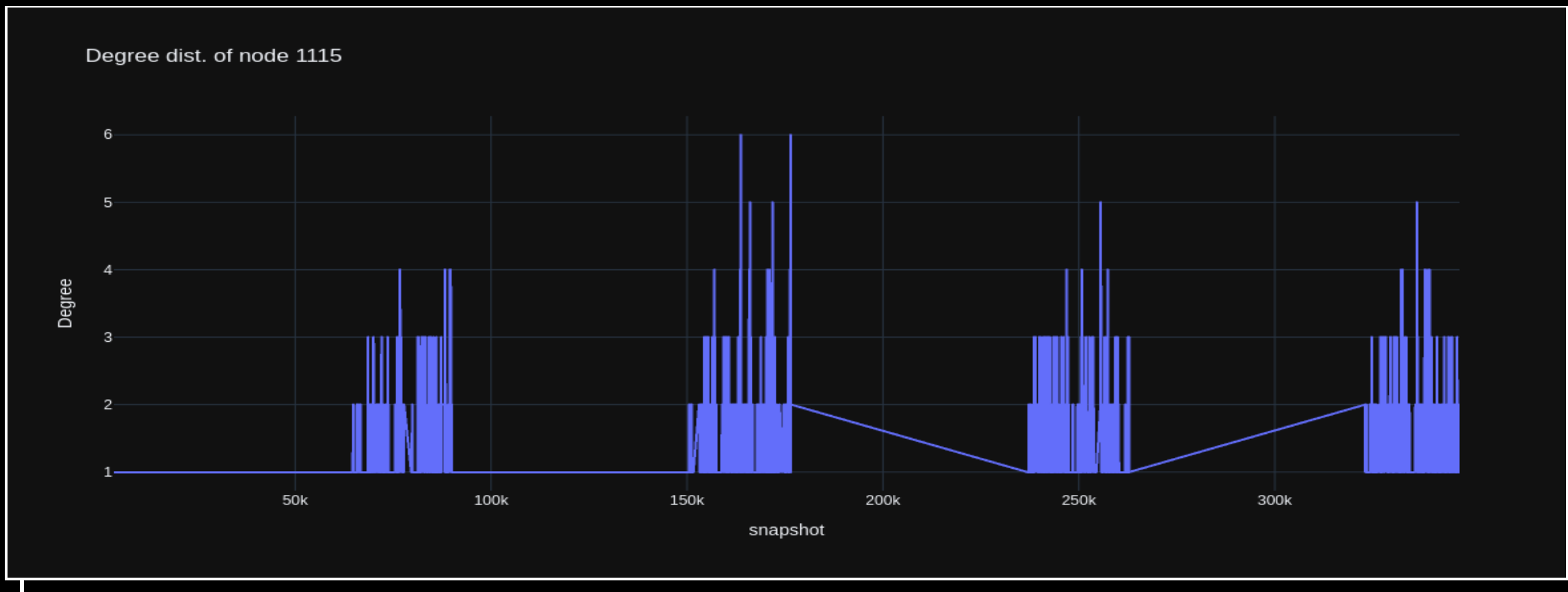
Prevalence

Prevalence of ID: 1115



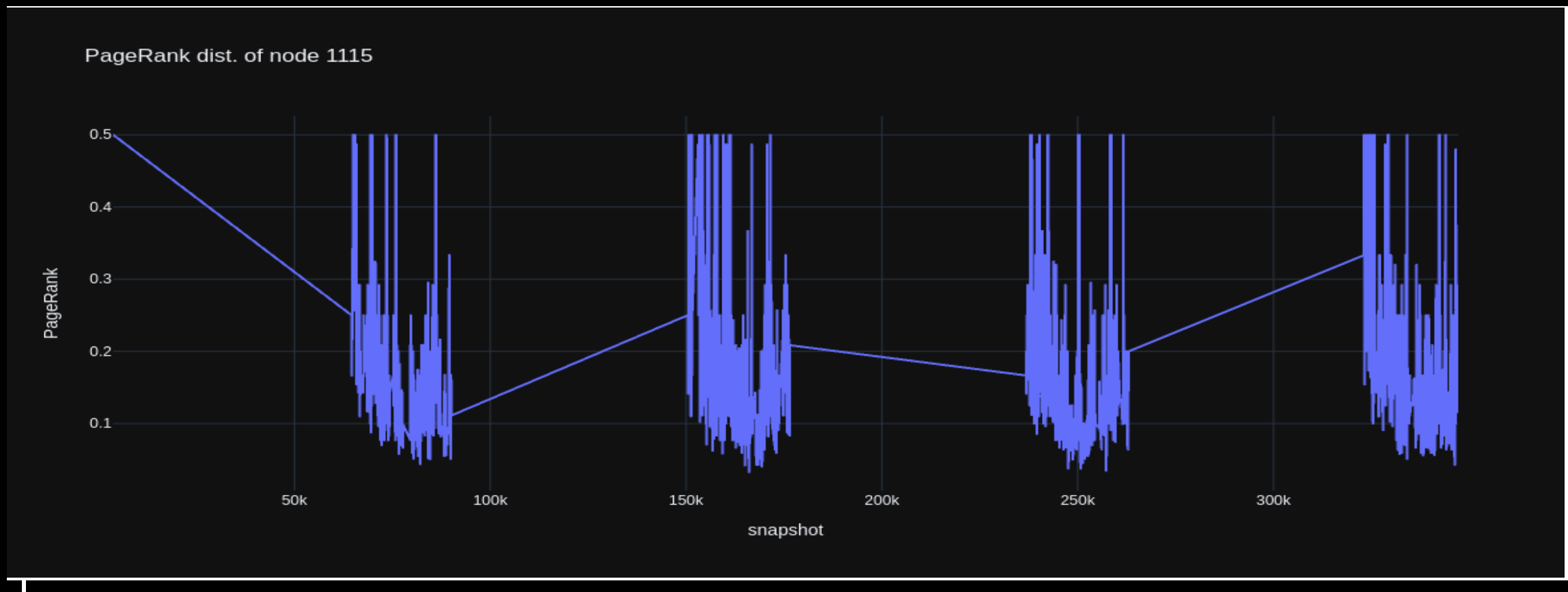


Network Features



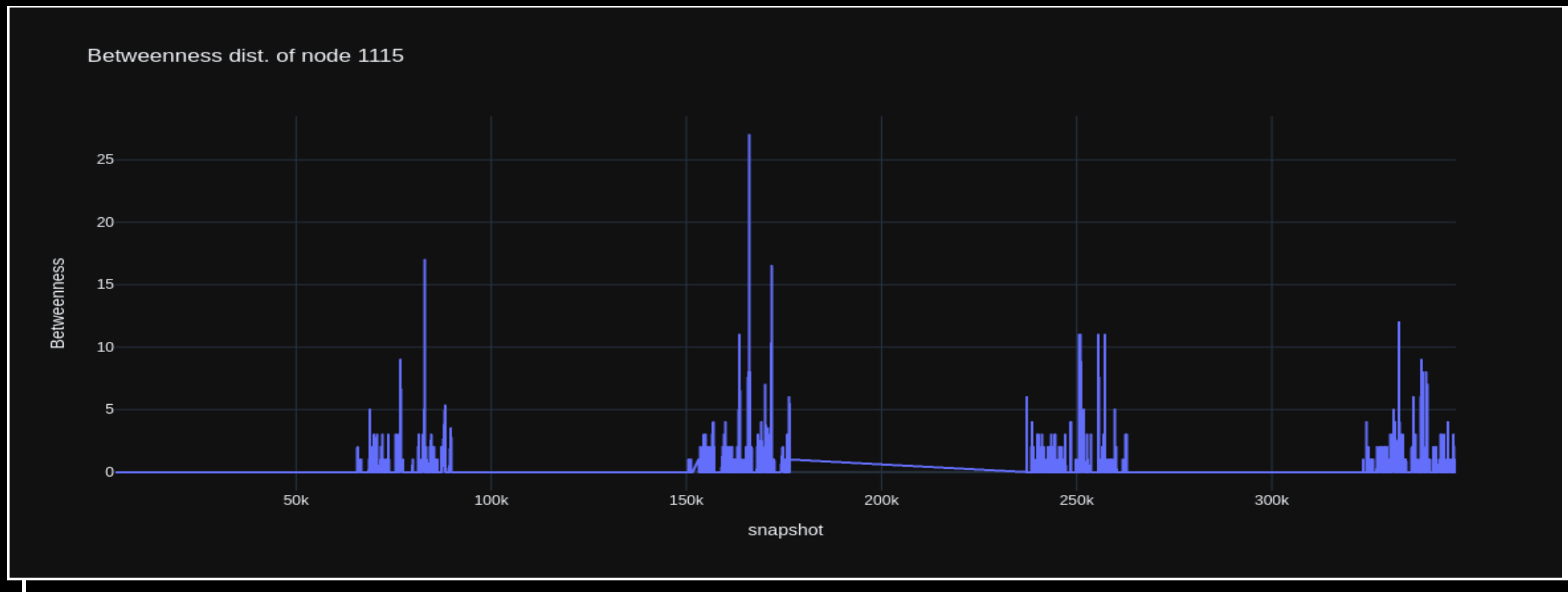


Network Features





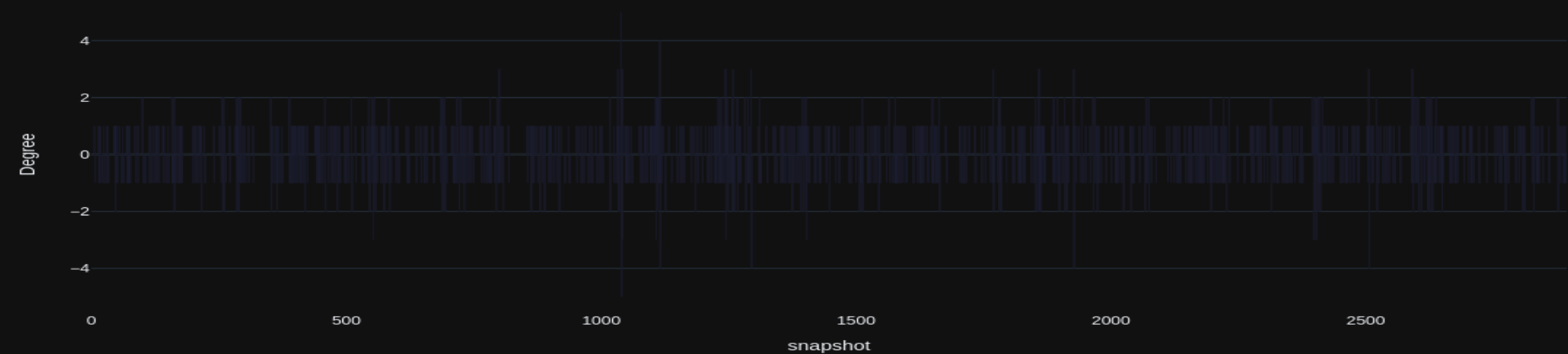
Network Features



The image features a central black circle with a light green double-line border. Inside this circle, the word "Fluctuations" is written in a white, sans-serif font. Surrounding the central circle are several abstract geometric elements: a white zigzag line on the left, a small orange circle at the bottom left, a larger orange circle at the top right, a set of four parallel white diagonal lines on the right, and a large orange semi-circle at the bottom right.

Fluctuations

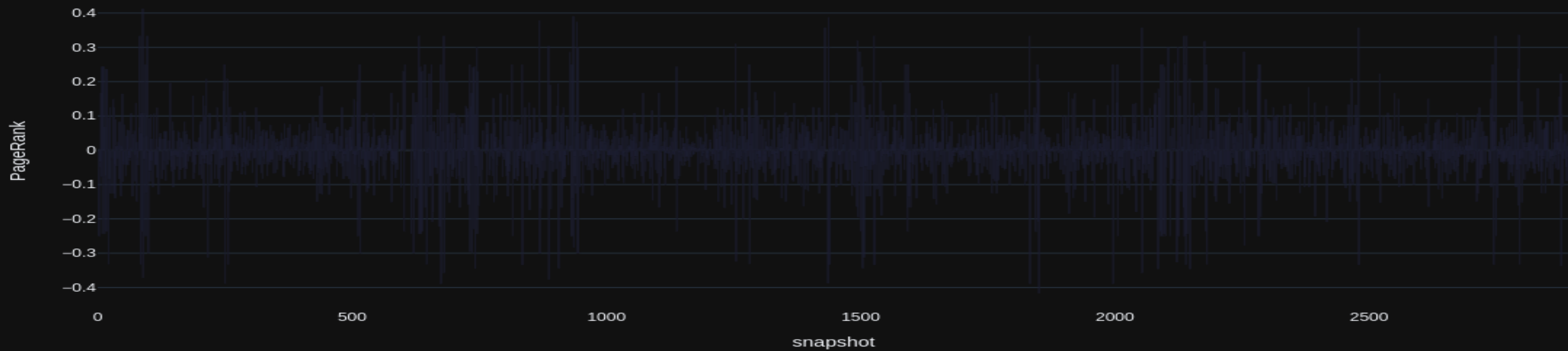
Difference of Degree for ID:1115



Difference of Degree for ID:1148



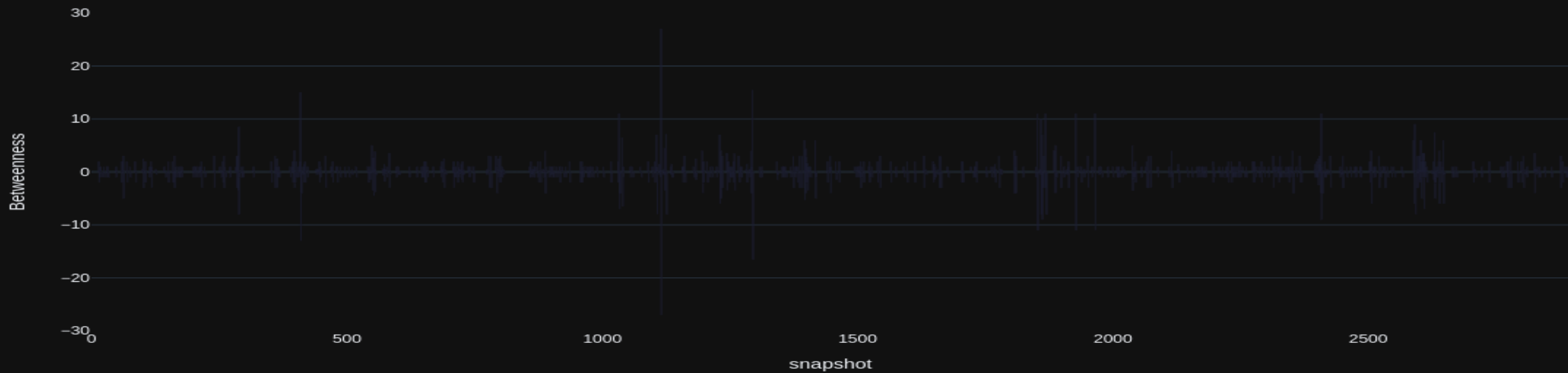
Difference of PageRank for ID:1115



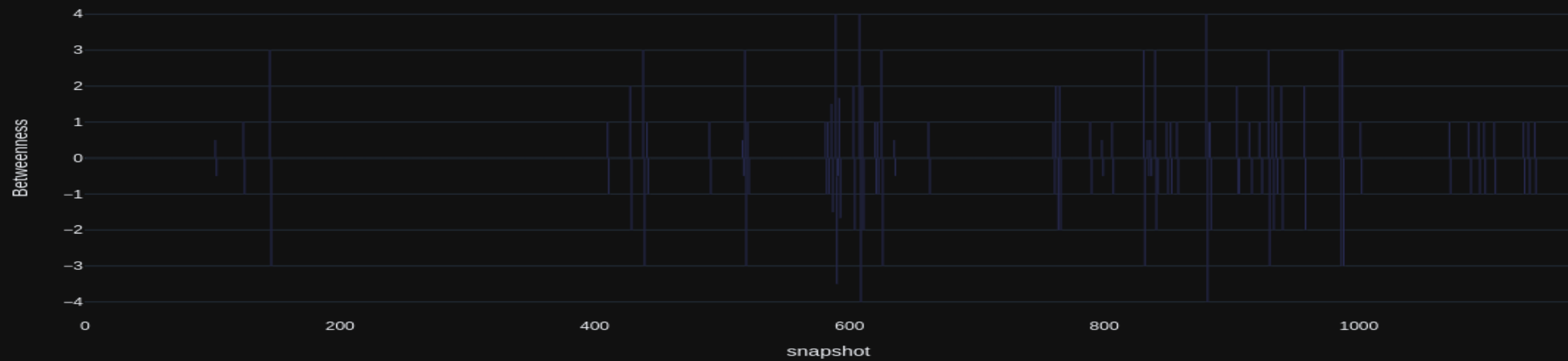
Difference of PageRank for ID:1148



Difference of Betweenness for ID:1115



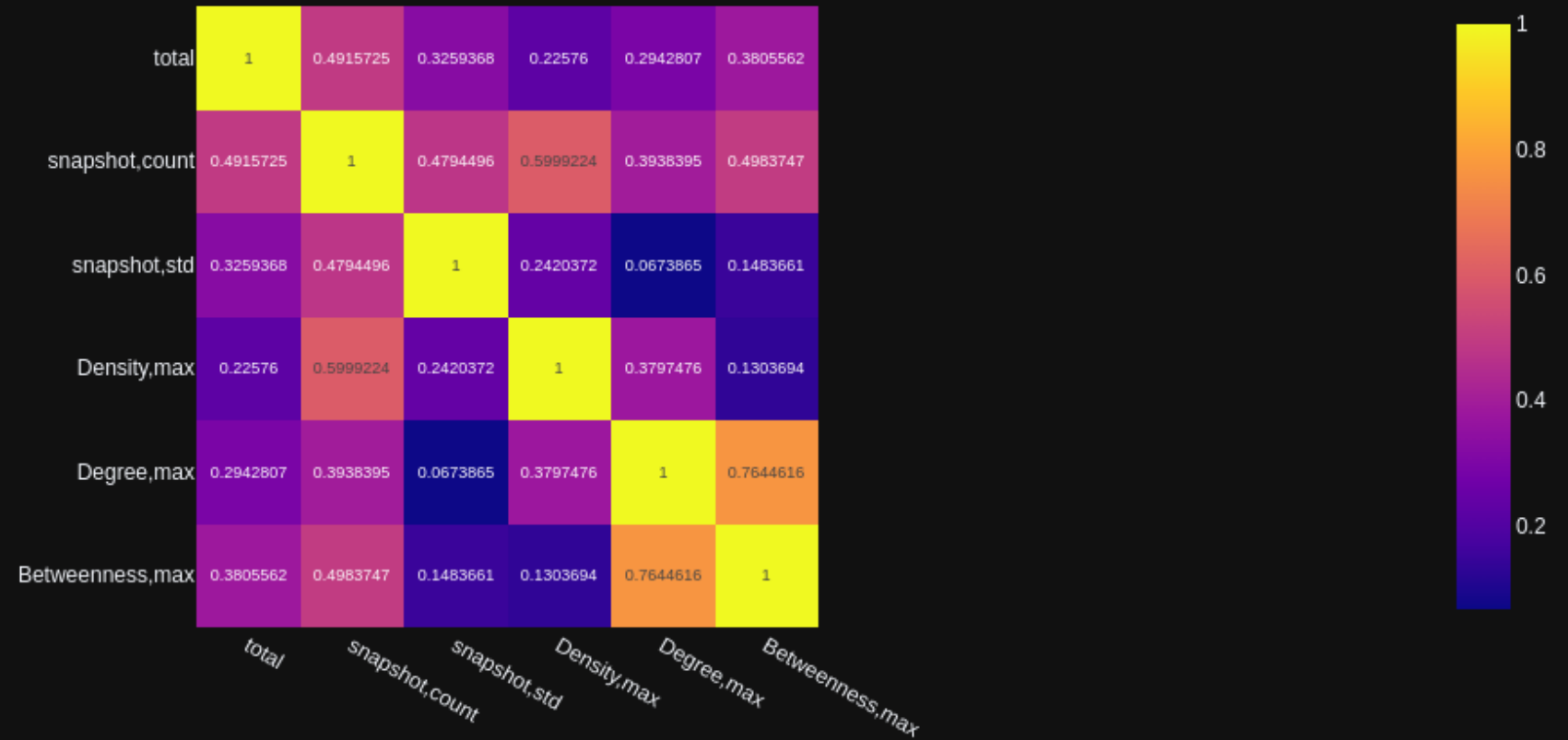
Difference of betweenness for ID:1148



The image features a large, thin white circle centered on a black background. Inside this circle, the word "Correlations" is written in a white, sans-serif font. Surrounding the central circle are several abstract geometric elements: a thick light green arc on the right side of the circle, a small orange circle in the top right, a small orange circle in the bottom left, a large orange circle in the bottom right, a white zigzag line on the left, and a series of white diagonal lines on the right.

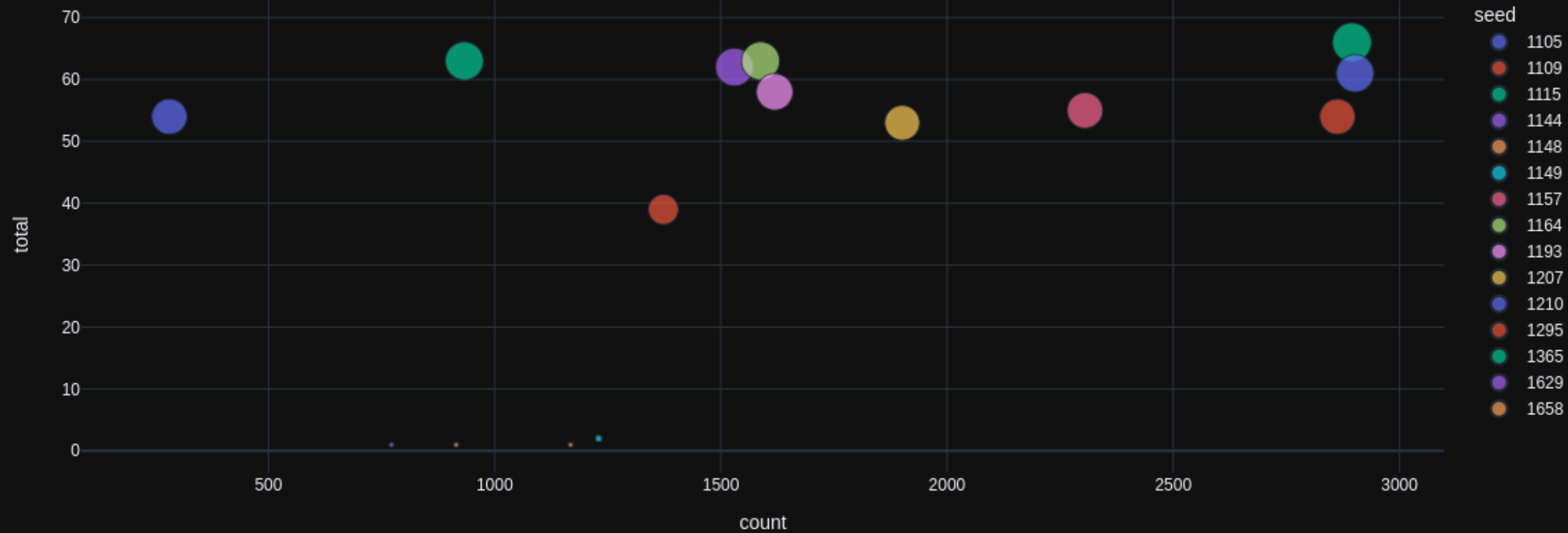
Correlations

Correlation between Graph measurments and Total number of cases



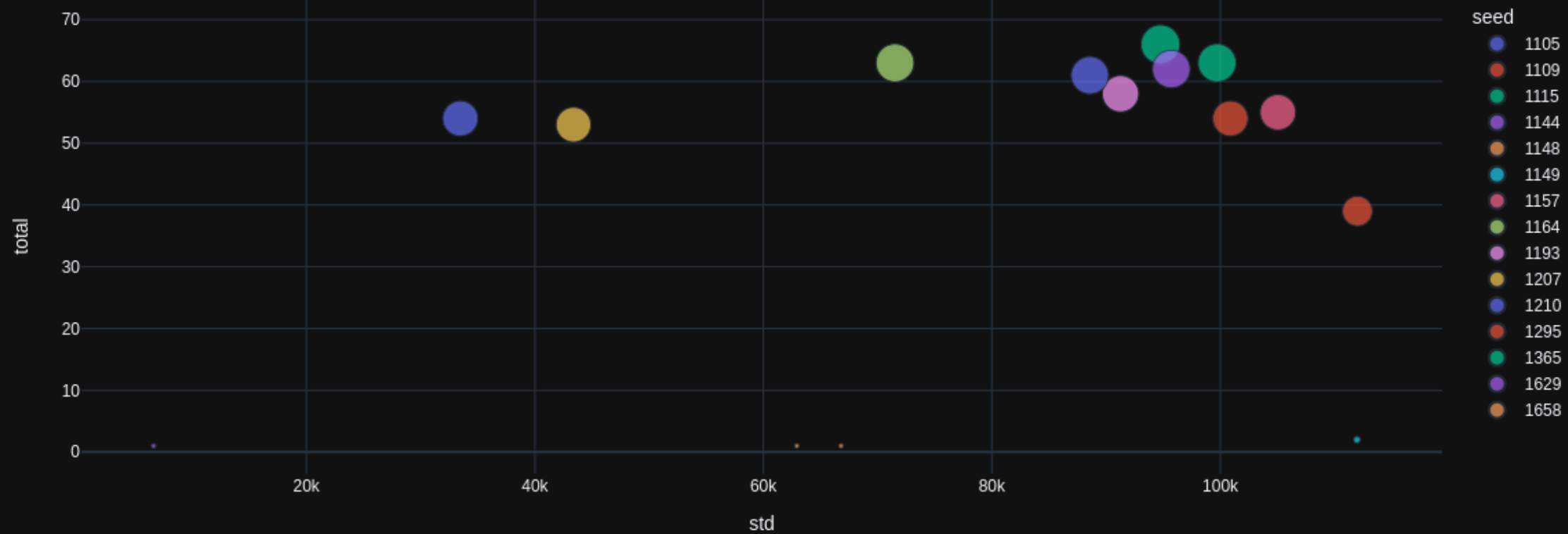
Correlation

Total vs. snapshot count

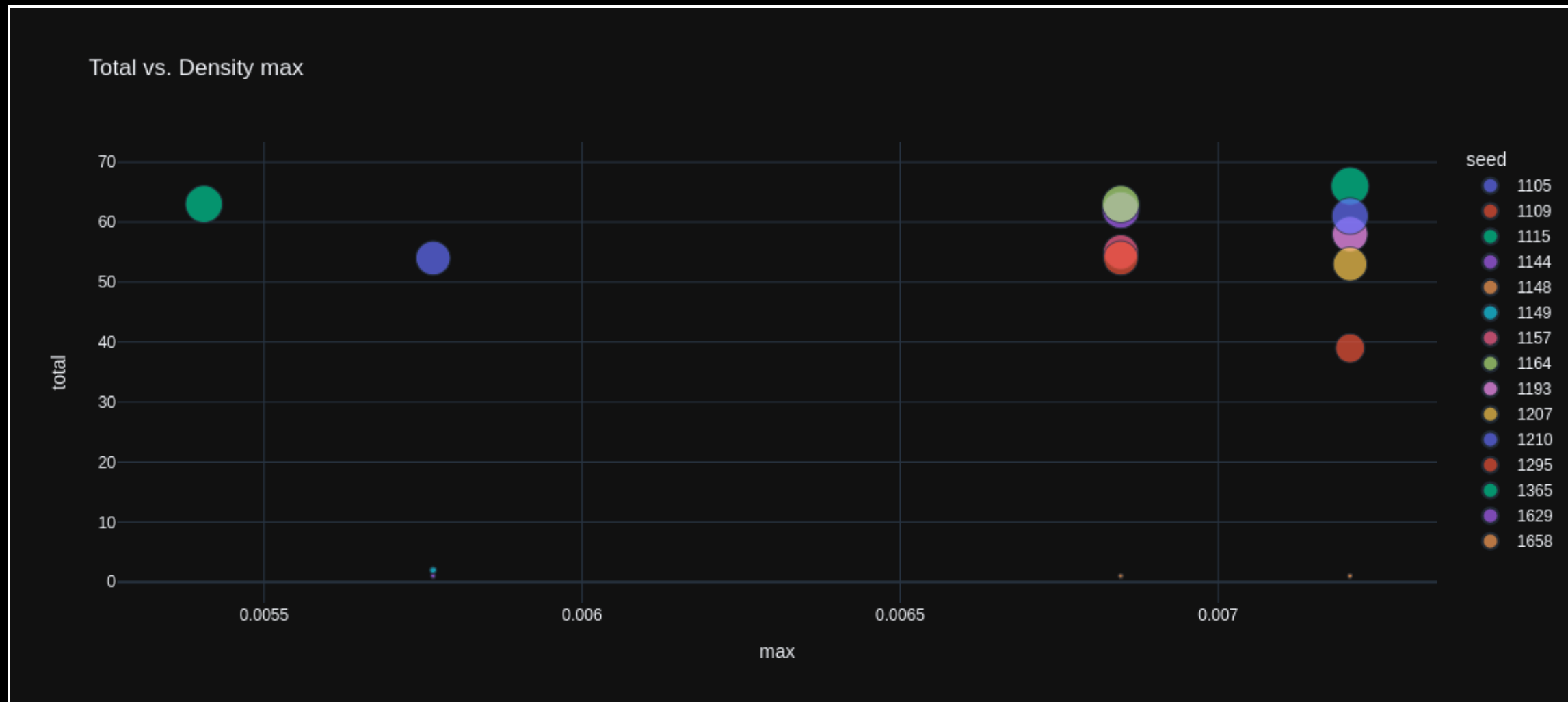


Node Activity

Total vs. snapshot std

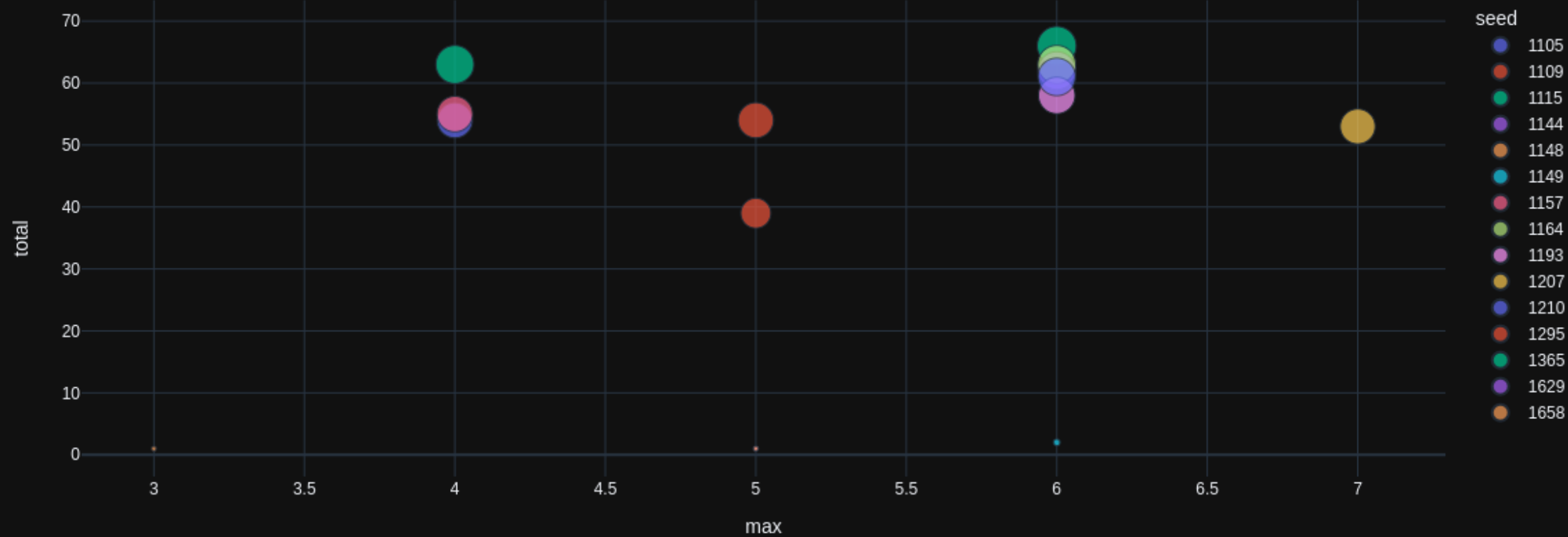


Node Activity



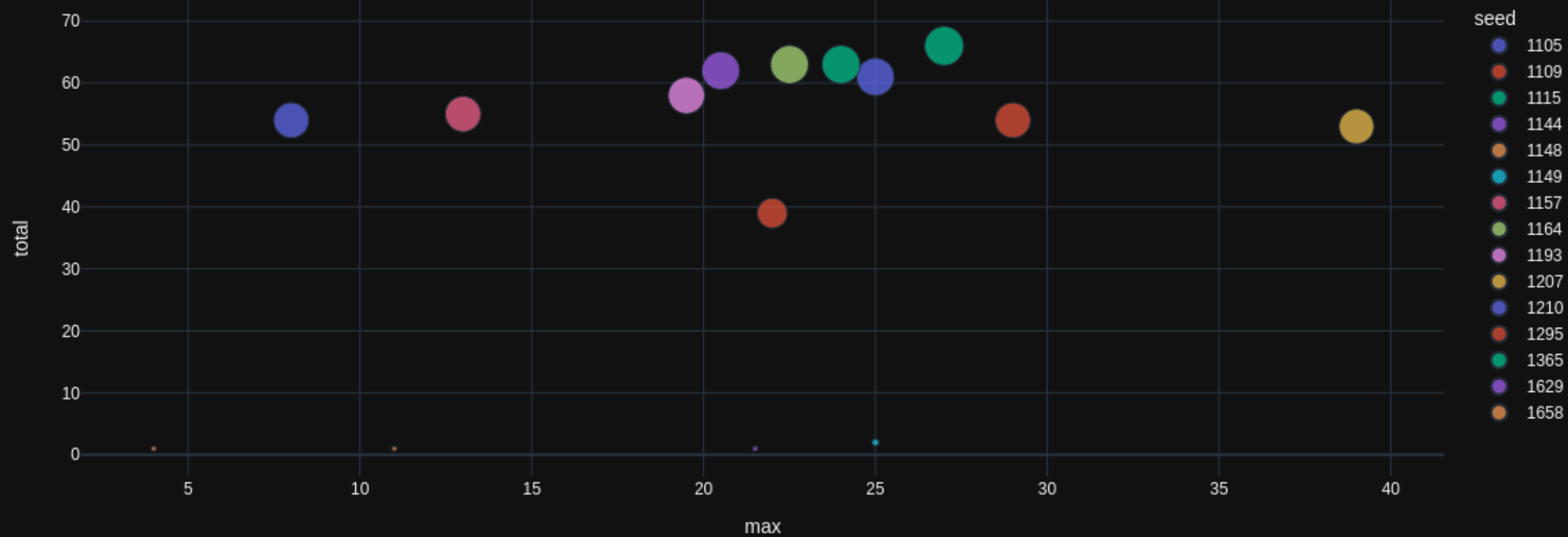
Density of the Network

Total vs. Degree max



Degree Dist.

Total vs. betweenness max



Betweenness Dist.