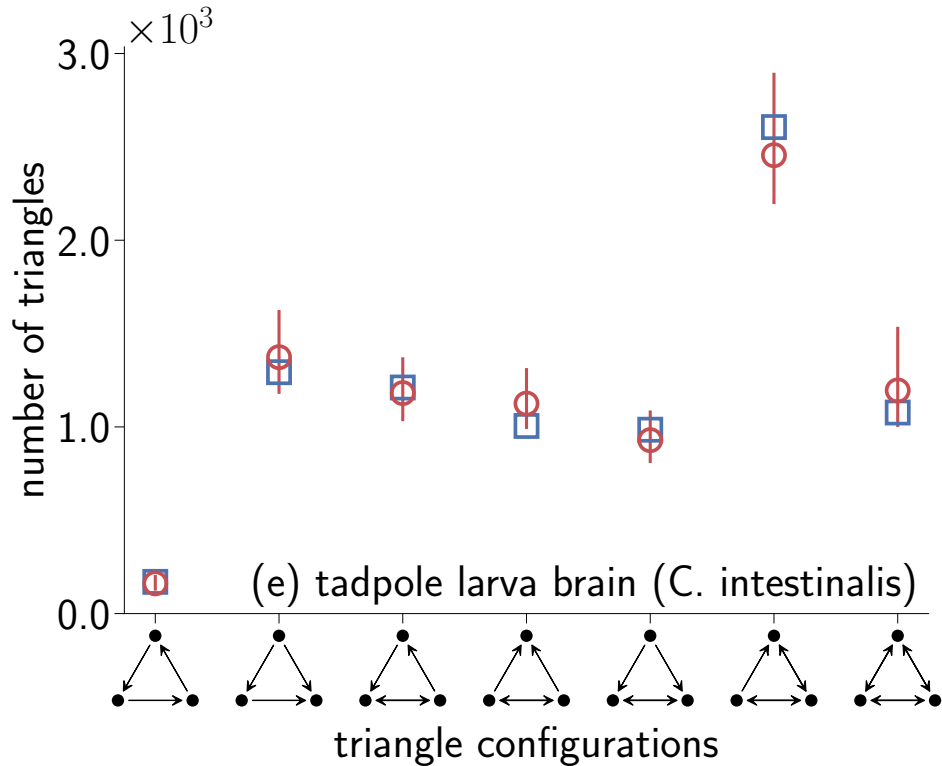
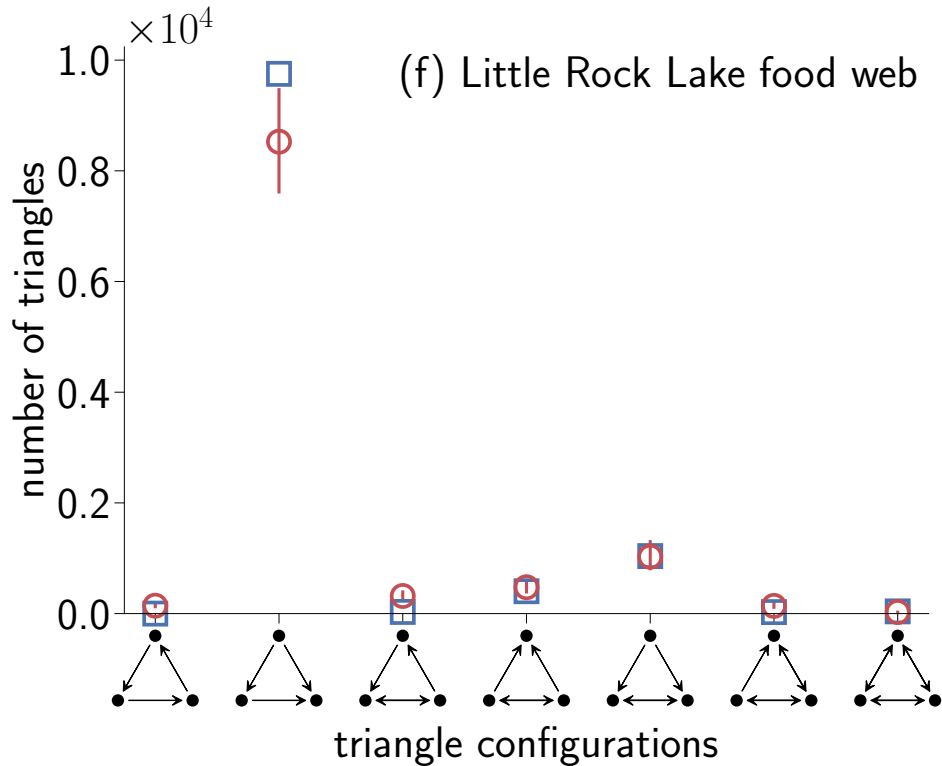


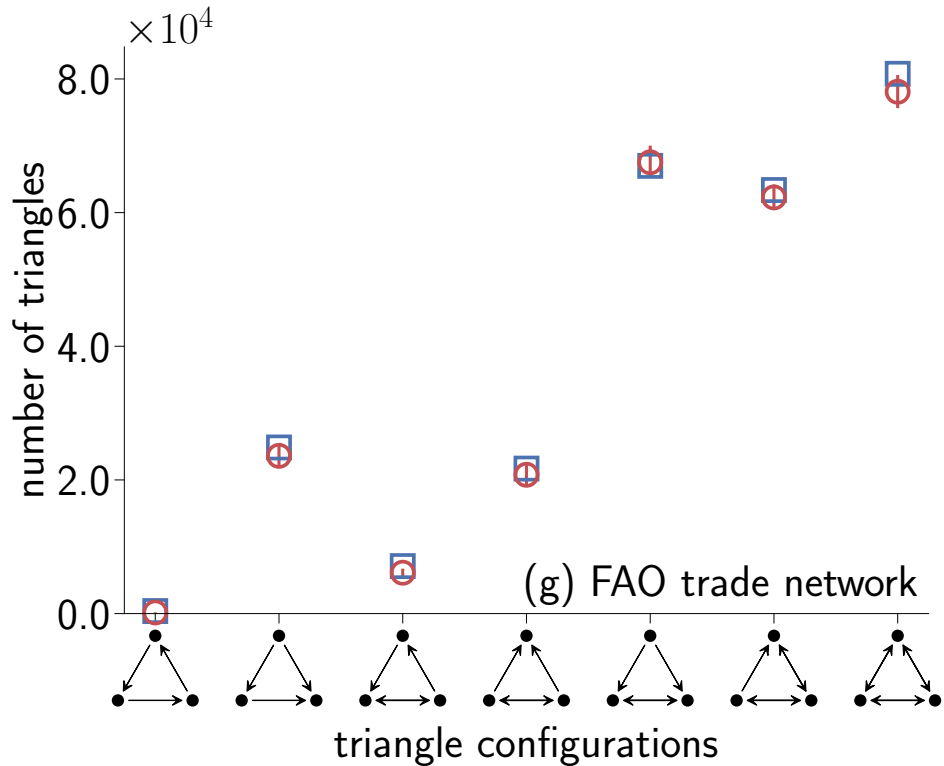


Realistic clustering patterns in directed geometric networks

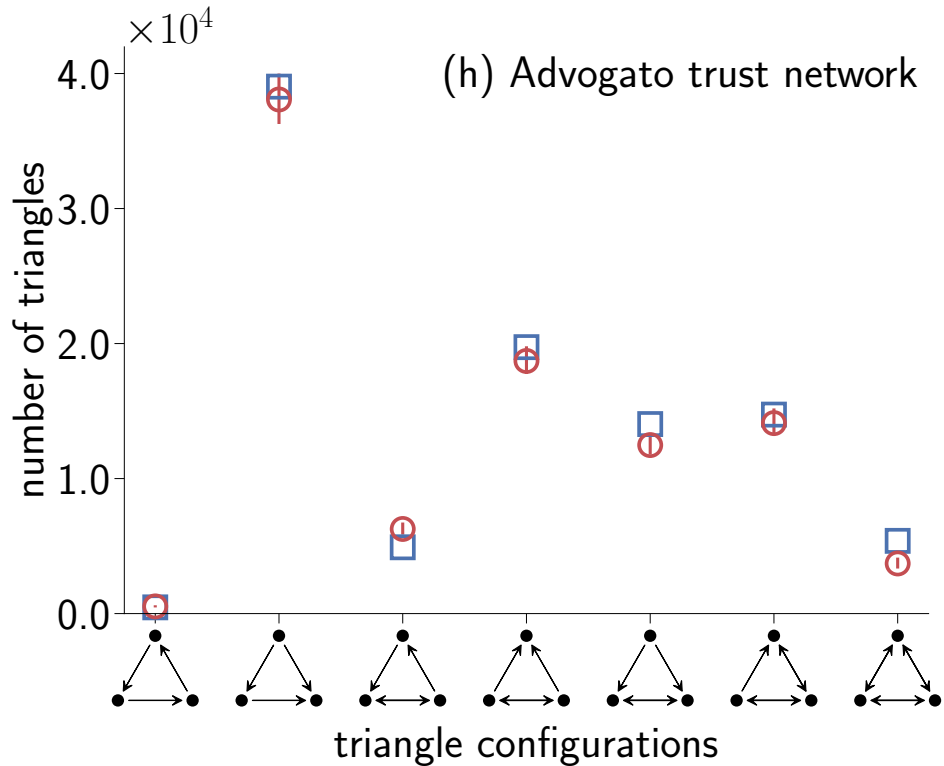


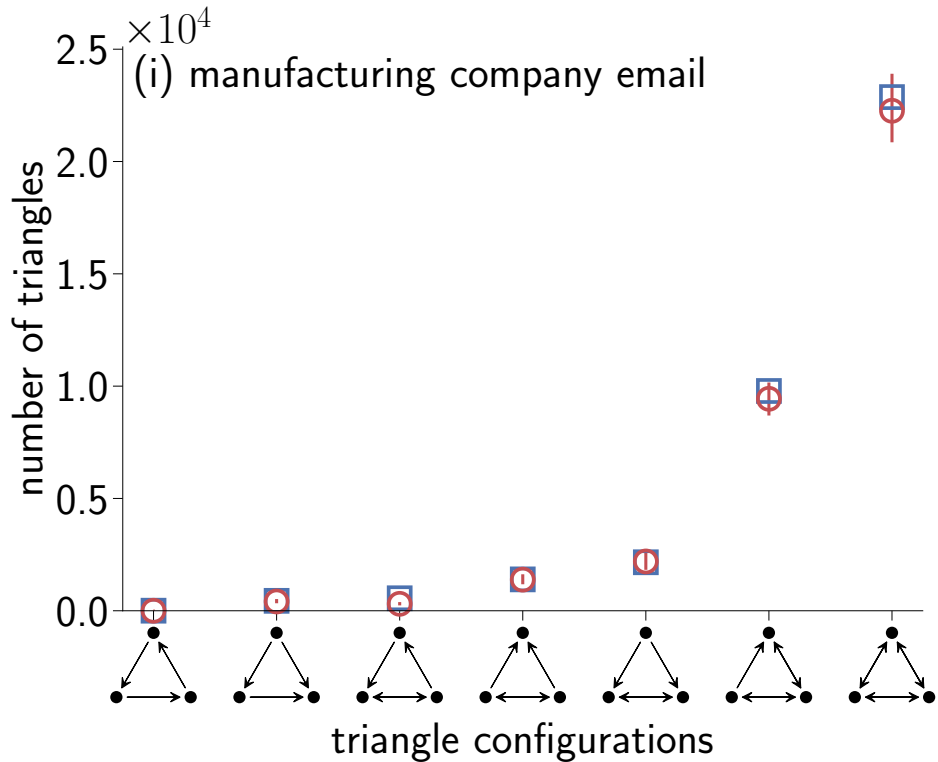
(f) Little Rock Lake food web



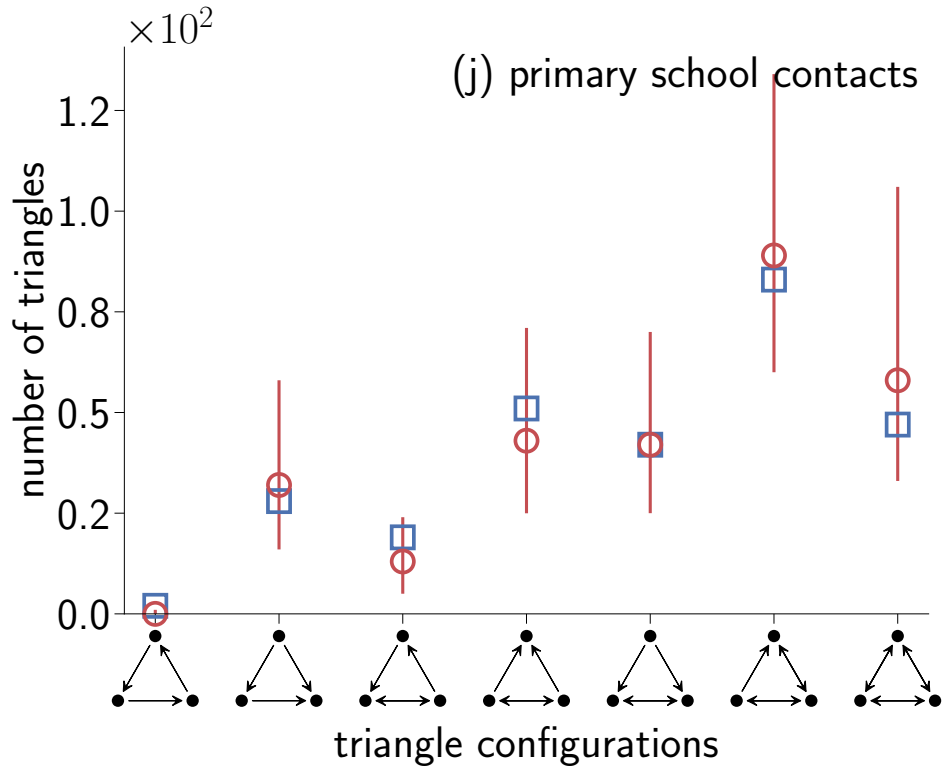


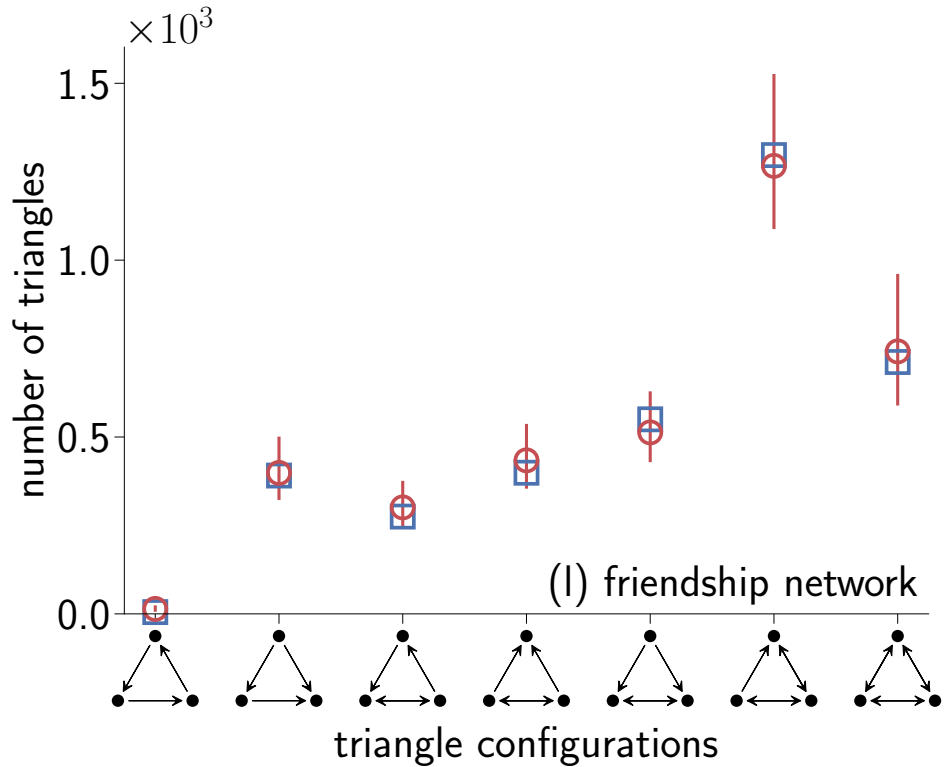
(h) Advogato trust network

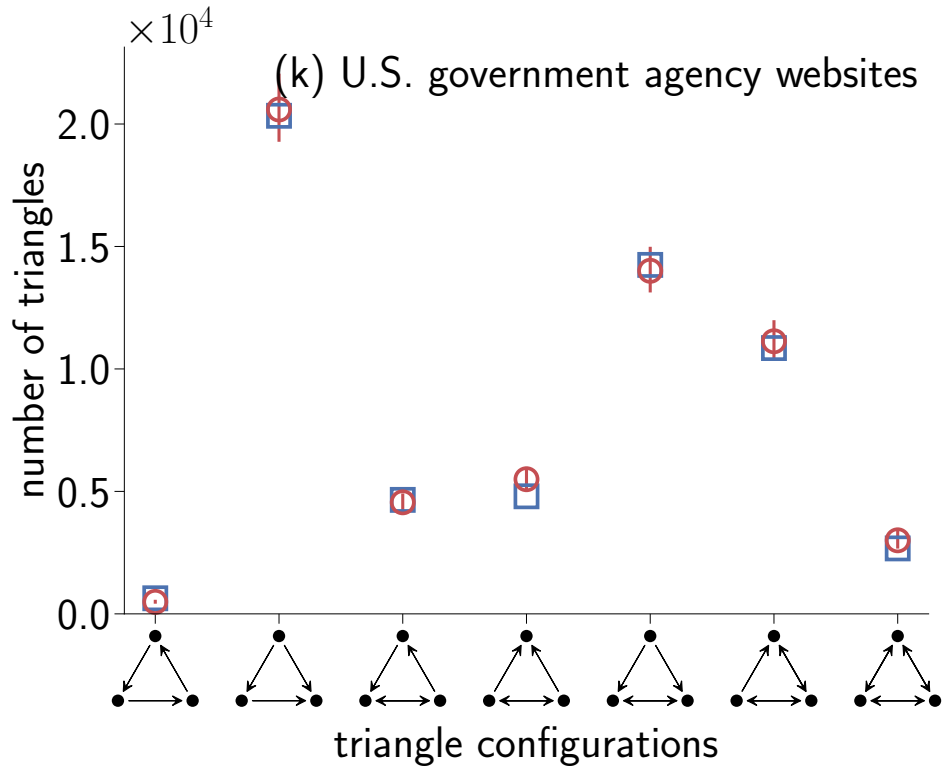




(j) primary school contacts

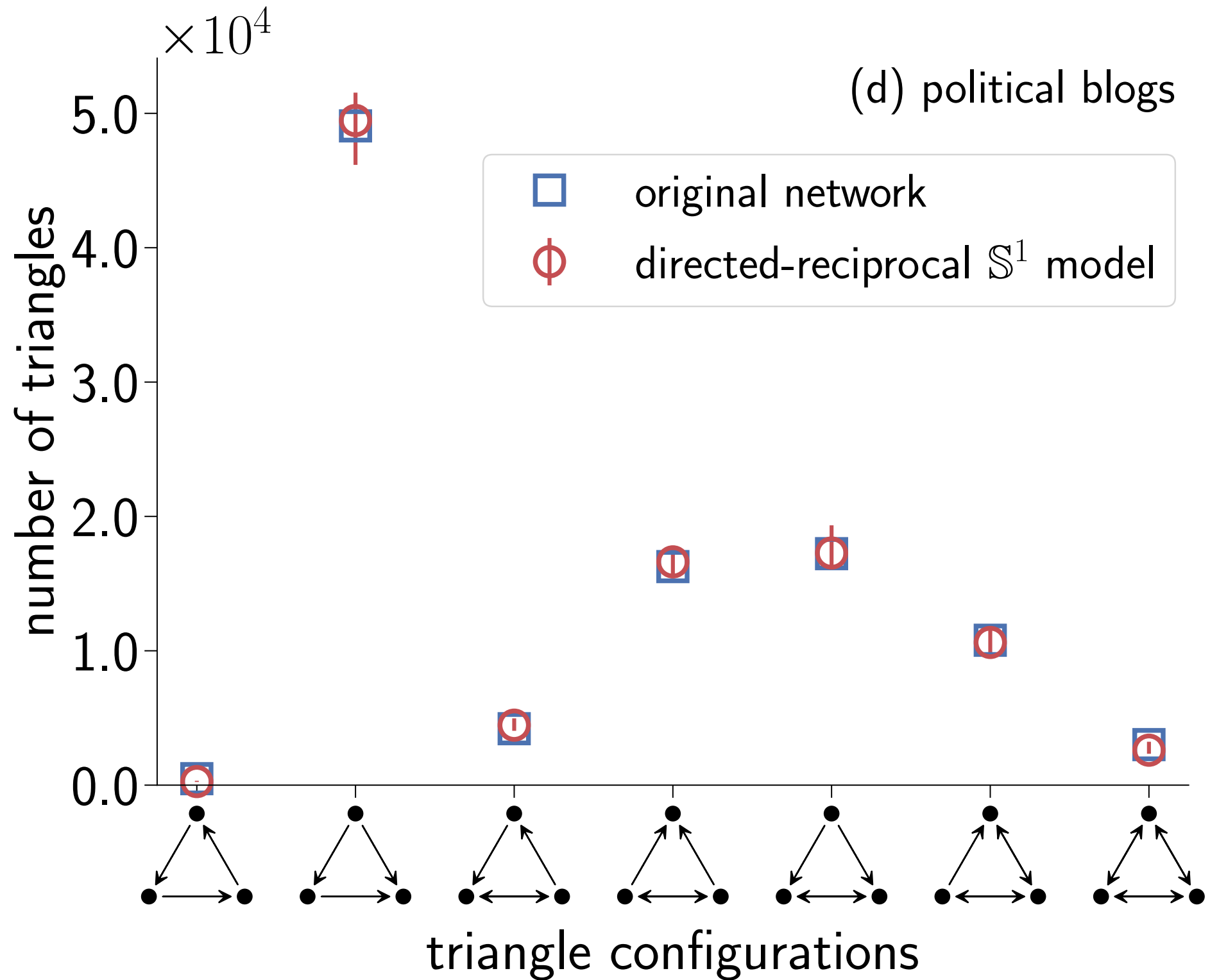






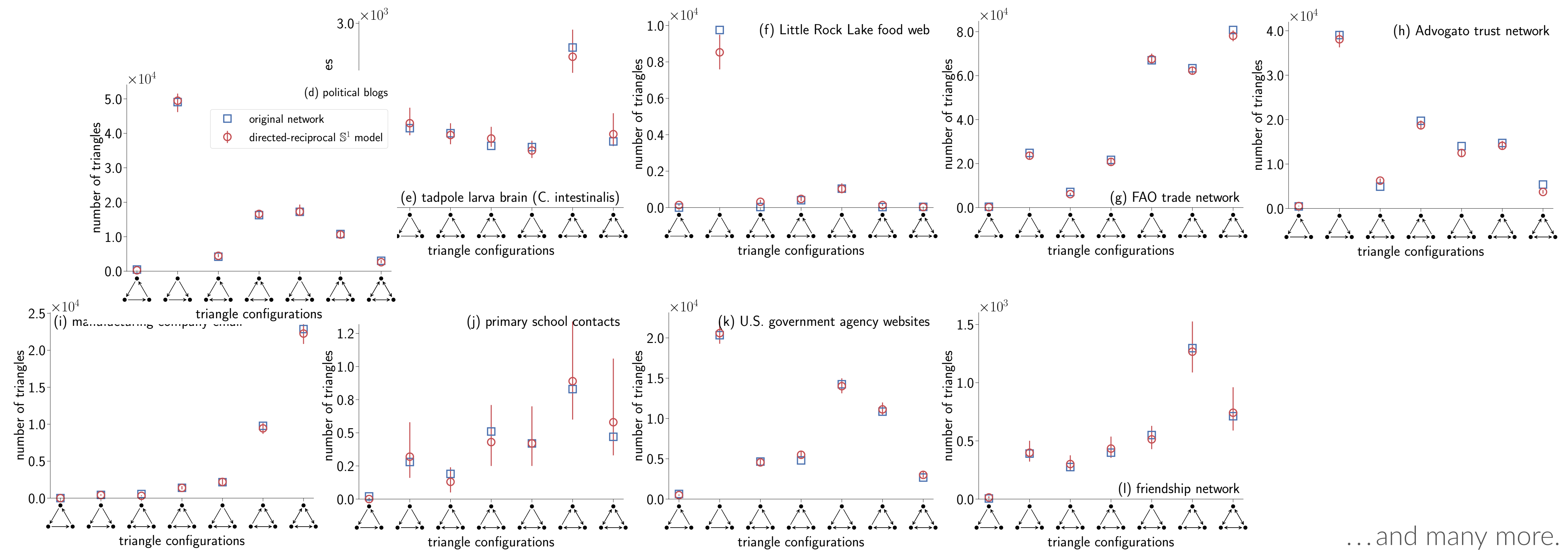
.
.
. and many more.

(d) political blogs



Coupled with an underlying geometry, the joint degree distribution, the reciprocity, and the density of triangles fix the clustering patterns in the network.

Realistic clustering patterns in directed geometric networks



Coupled with an underlying geometry, the joint degree distribution, the reciprocity, and the density of triangles fix the clustering patterns in the network.

Summary

1. Presented a generalization of the \mathbb{S}^1 model to directed networks.
2. Proposed a general approach to control reciprocity in any random network model.
3. Showed that the interplay between in/out-degree, reciprocity and clustering in directed networks can be accurately captured by a geometric approach.

Further details

▷ Allard, Serrano & Boguñá, *Geometric description of clustering in directed networks*, Nat. Phys. (in press), arXiv:2302.09055

 <https://github.com/networkgeometry/directed-geometric-networks>

Ongoing work / open questions

- ▷ How to infer the angular positions as well. Does this information improve the accuracy of the model?
- ▷ Can we disentangle the effect of ν , β and the correlation between in- and out-degrees on the accuracy of the model?
- ▷ Why are some real networks not fitted well by the model?
- ▷ What about vertex-wise reciprocity? Is it uniform/heterogeneous? Is the model accurate?