

A Breeding Pool of Ideas: Analyzing Interdisciplinary Collaborations at the Complex Systems Summer School

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The Complex Systems Summer School

The Santa Fe Institute's Complex Systems Summer School is the premier complex systems workshop where diverse participants work together on self-directed research projects

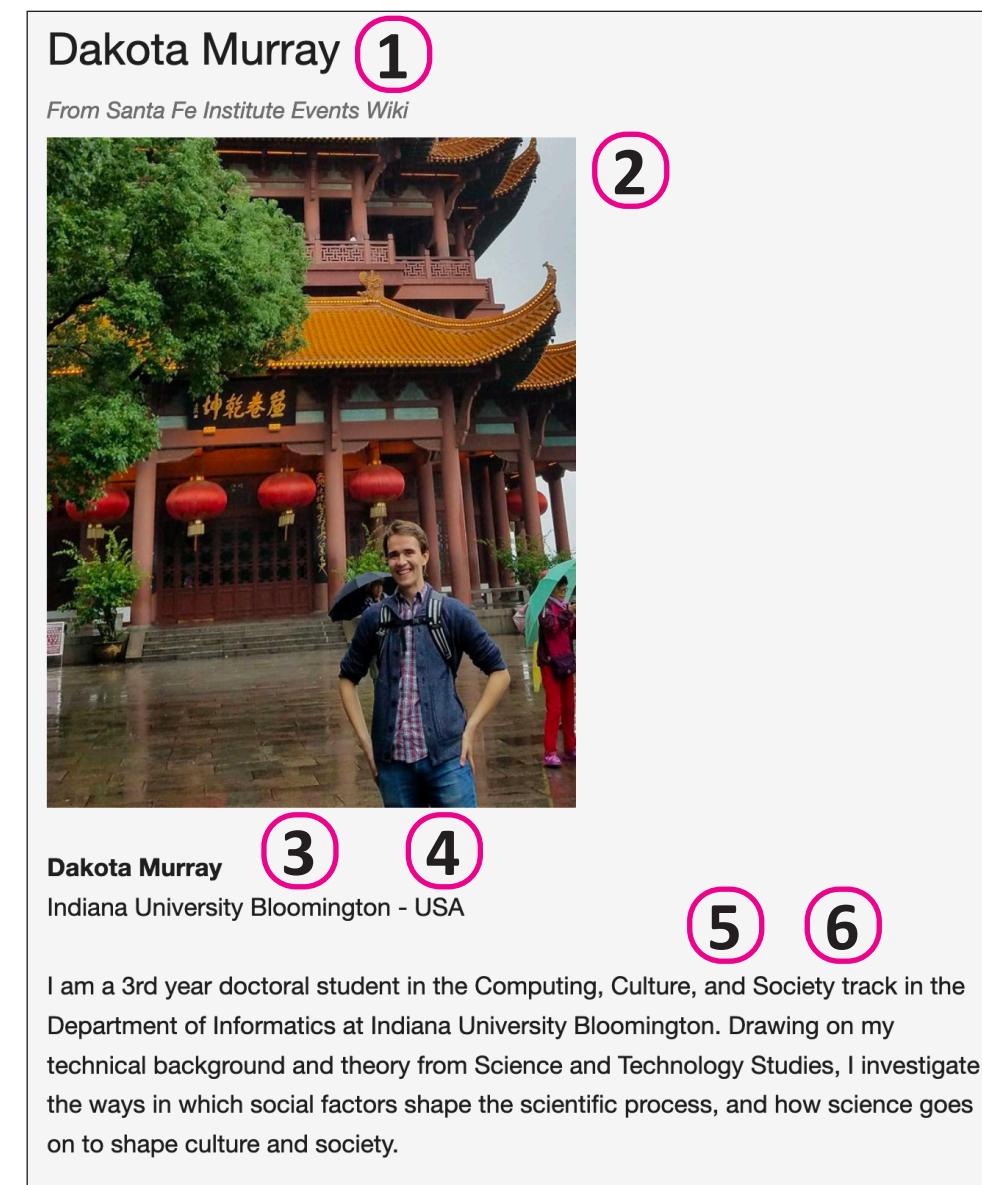
Lacking curricular, resource, and research constraints, the summer school is in many ways an ideal environment for academic collaboration

Does the program fulfill its goal of encouraging collaboration among varied people on interdisciplinary research?

Data

Manually extracted and coded from the summer school's Wiki (2005-2019)

Participant Profile

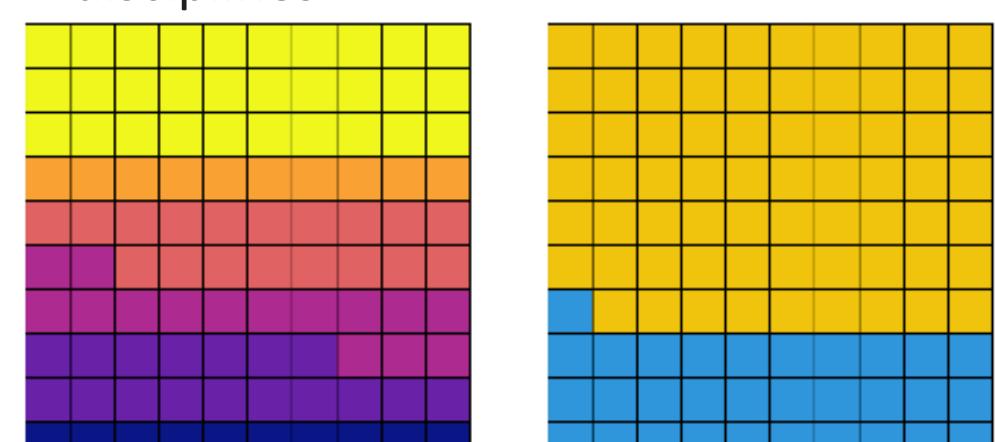


1. Name
2. Perceived gender
3. Organizational affiliation. If University, also prestige with Shanghai Rankings
4. Country of study/work
5. Discipline, coded from self-reported description into UNESCO classifications
6. Professional position (i.e., student)

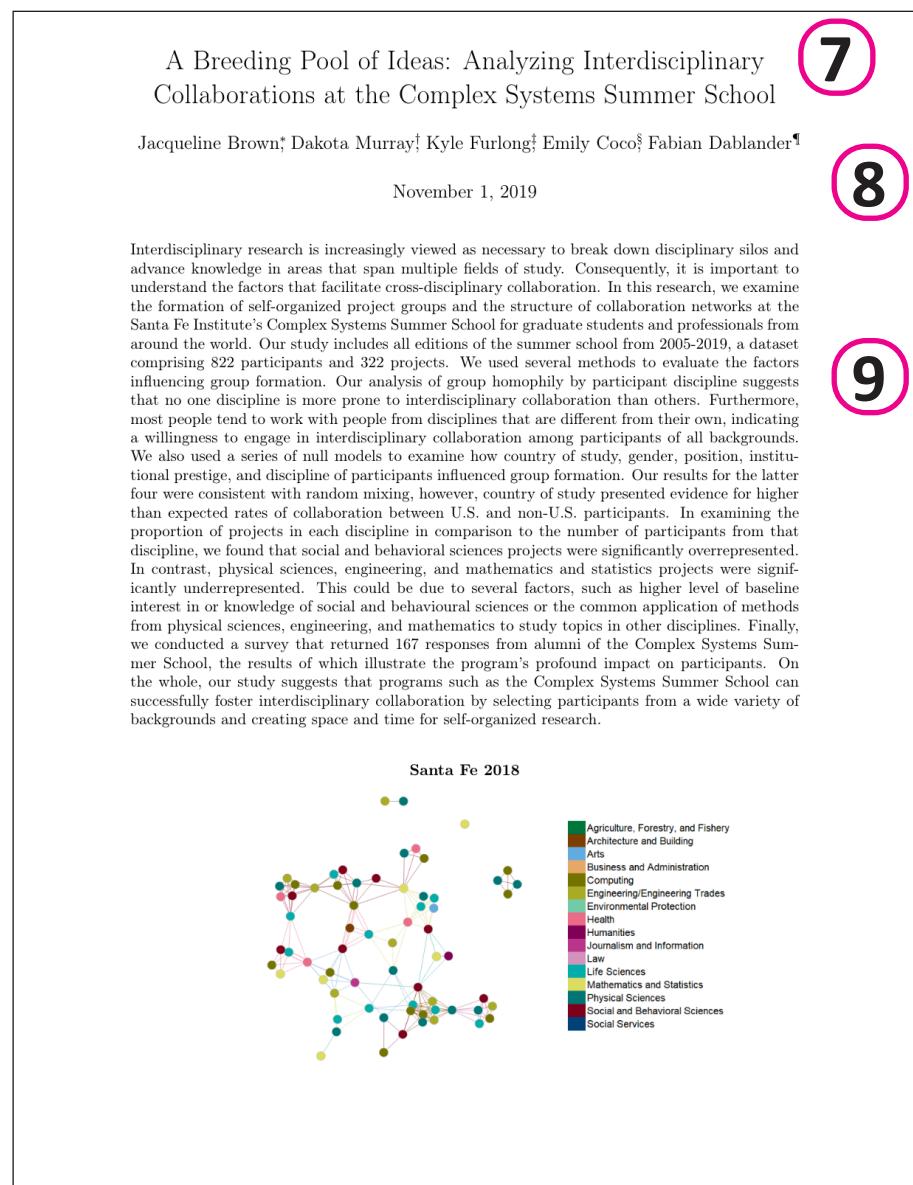
Participant characteristics

After parsing and cleaning the data, we find that participants are

- From diverse disciplines
- Mostly students

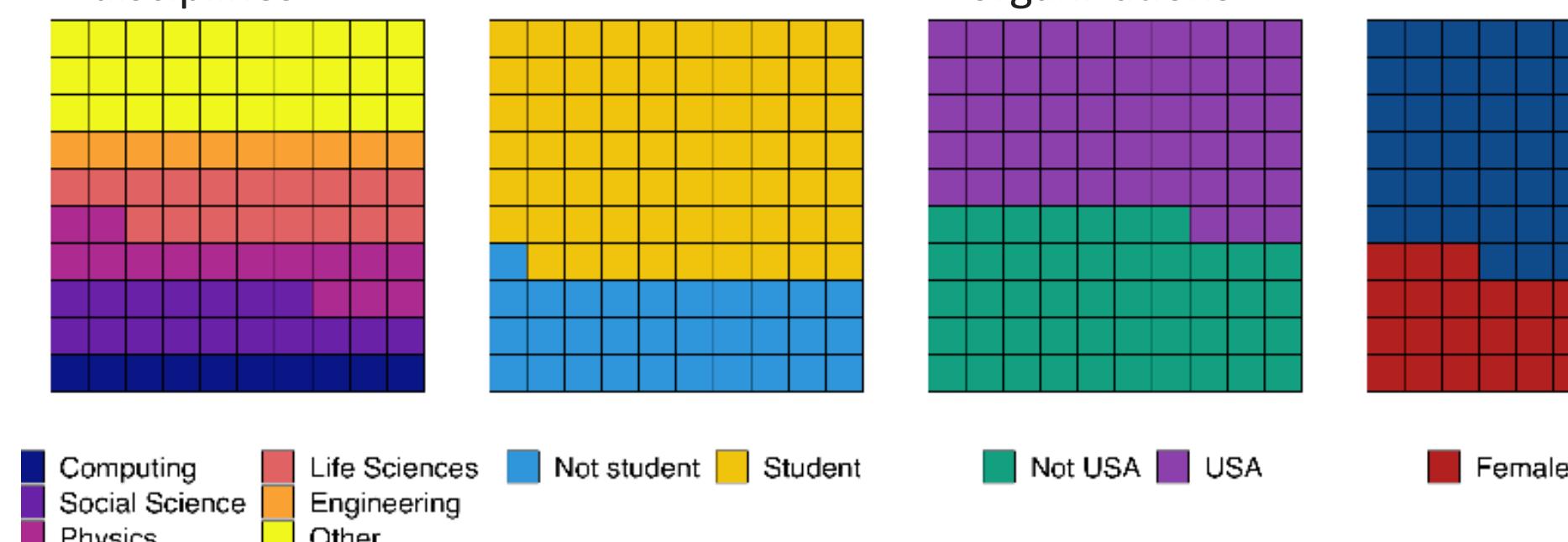


Project abstract

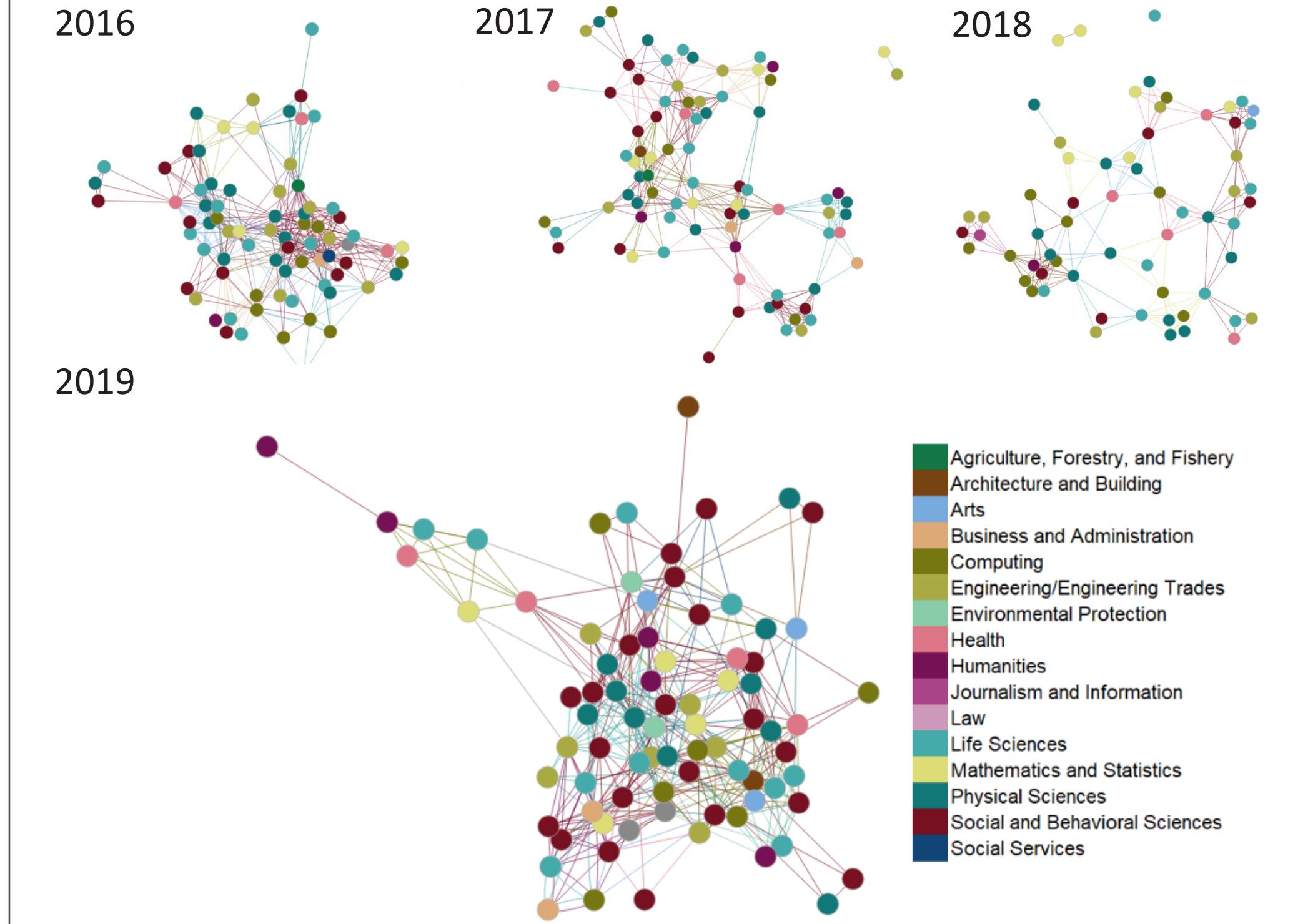


7. Title

8. Participants involved
9. Project discipline, coded from title and abstract into UNESCO classifications

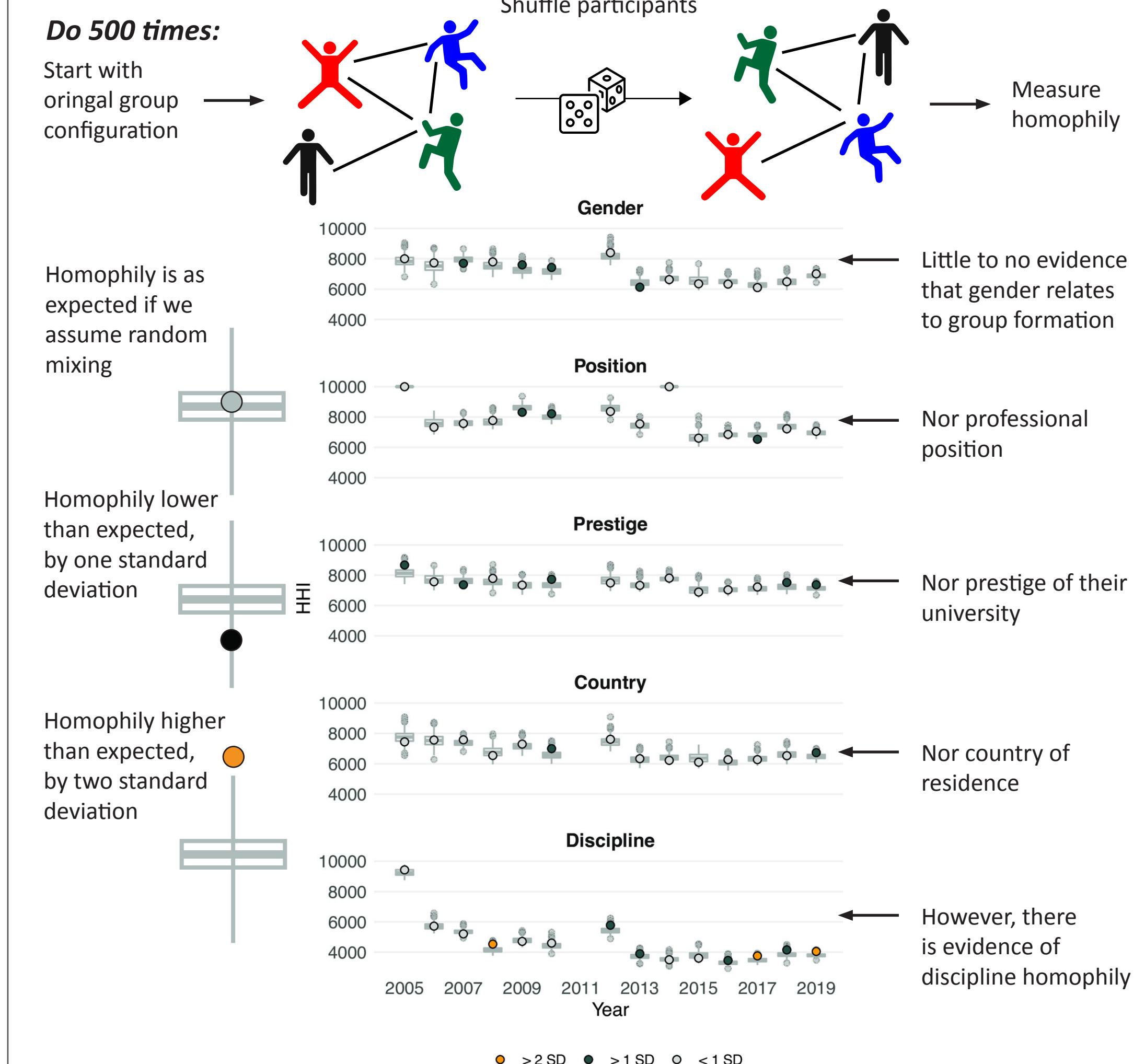


Collaboration networks at the summer school



Do demographics relate to who works together?

Compare actual homophily (using Herfindahl-Hirschman Index) to a null model that assumes random mixing



Which disciplines work together?

Actual vs. expected collaborative pairs across all years



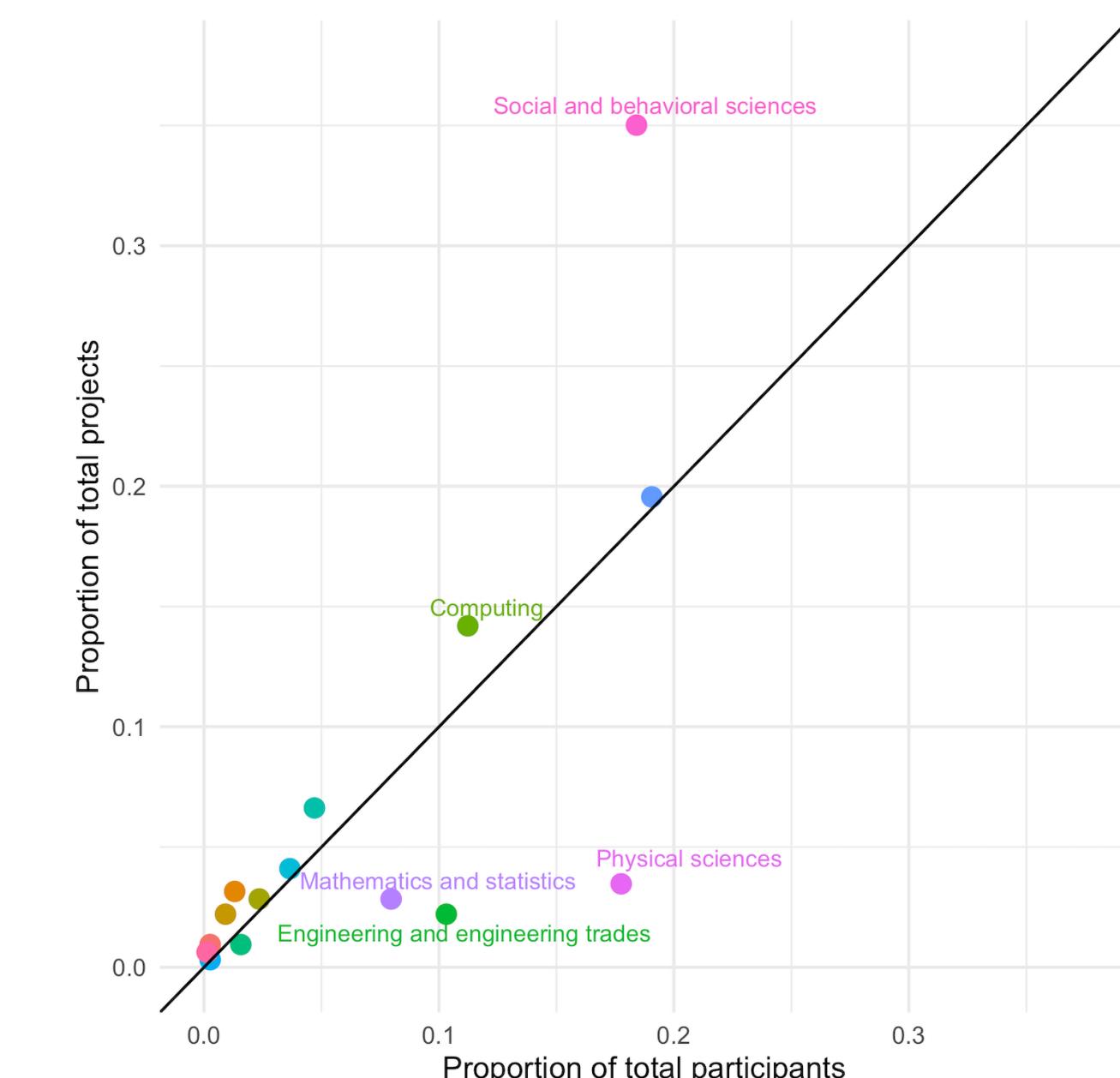
Collaborative pairs formed for every pair of participants in a group

- Homophily in
- Computing
 - Engineering
 - Physics
 - Math & Statistics

- Collaboration in
- Physics with Engineering
 - Health with Math & Statistics
 - Computing with Social Science

What kinds of projects do they work on?

Proportion of participants in each discipline by proportion of project disciplines



A greater proportion of groups collaborated on Social Science projects than there were individuals who had a Social Science background

There was a low proportion of Physics, Engineering, and Math & Statistics projects than there were participants

When participants collaborate, they tend to do so on social science projects

In summary

- Group formation at the Complex Systems Summer School is mostly consistent with random mixing, except in terms of discipline
- Participants in the "hard sciences" tend to work together, and some disciplines have affinities for collaboration
- When people work together, they tend to work on Social Science projects

We thank the Santa Fe Institute for providing facilities and guidance. We also thank our fellow participants in the 2019 Complex Systems Summer School.

For more information,

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- Preprint at: <https://osf.io/preprints/socarxiv/e3z4v>

