

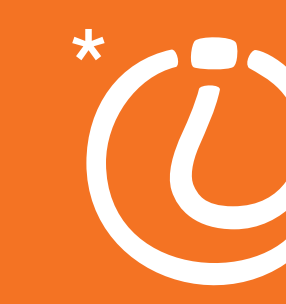
# USING AN ETHNOGRAPHY OF EMAIL TO UNDERSTAND DISTRIBUTED SCIENTIFIC COLLABORATIONS

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## ABSTRACT

We explore the finding from previous research that distributed teams collaborating on research use email to an overwhelming degree. This email is the source of collaboration and one of the central documents in the practice of doing science. We present an early idea of email focused ethnography and using visualizations to assist in the qualitative exploration of analyzing email communications. Of interest is the utility of different visualizations to inform follow up interviews of longitudinal fieldwork and data collection. Along with the benefits of the techniques we will also describe some of the challenges.

### RESEARCH QUESTION

*How do email exchanges provide analytic focus to study the culture and social nature of distributed collaborative research?*

## METHOD

### COLLECT

- › Established email filters in participants inbox.
- › Forwarded emails to an external account in real time.
- › Created script to extract metadata of emails & automatically transfer metadata to a structured excel file.

### CODE

- › Conducted participant observation on weekly basis and took field notes.
- › Read and code each email.

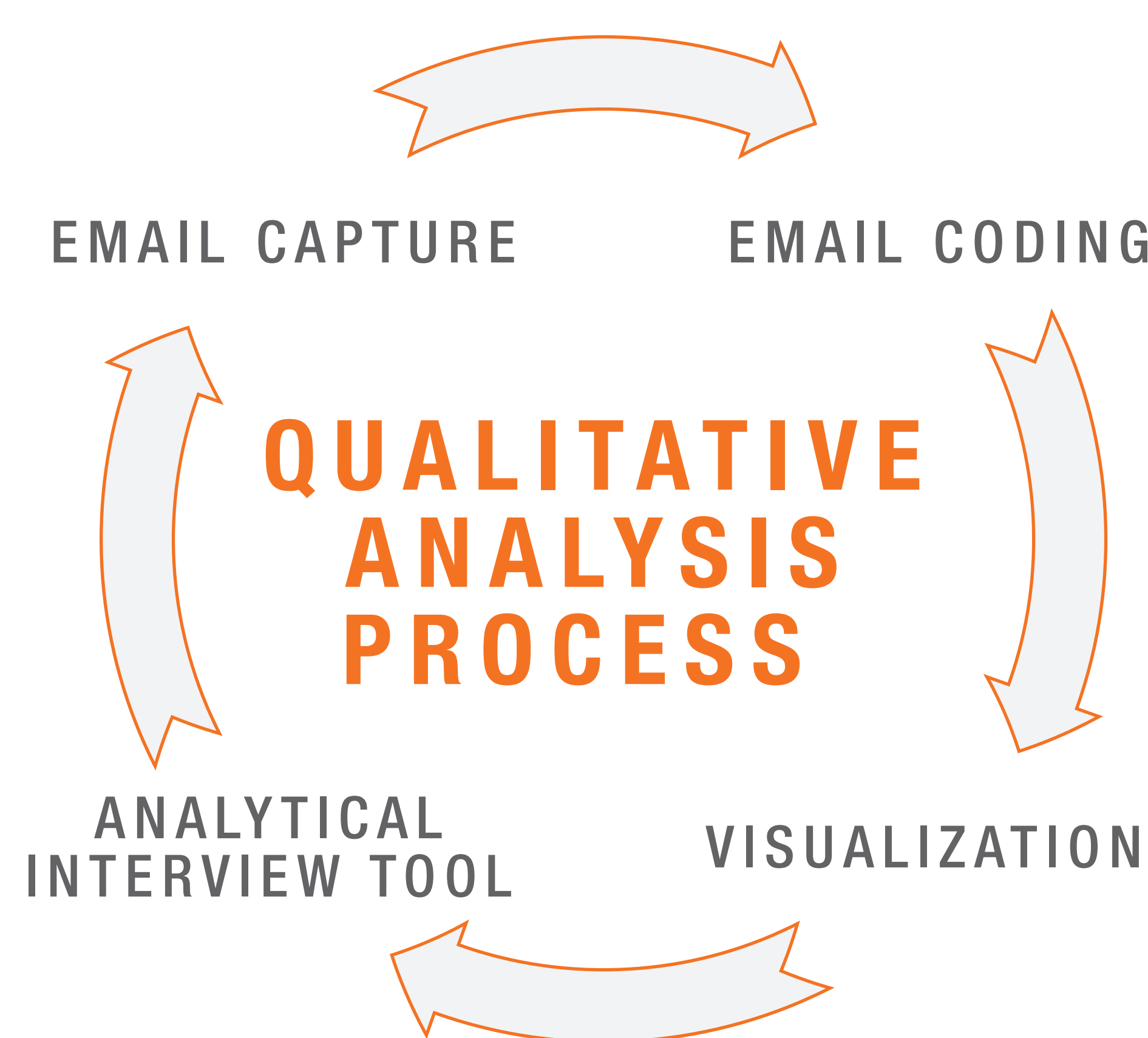
### VISUALIZE

- › Created a script in R to visualize metadata. This includes visualizations of inductive codes as well as email attributes such as the date, time, attachments, to, from, and carbon copy fields.

## PARTICIPANTS

Located in:  
New York, Arizona, and Massachusetts

MEMBER#	GROUP ROLE
MEMBER10	Professor
MEMBER9	Technologist
MEMBER8	Subject Matter Expert
MEMBER7	Graduate Student
MEMBER6	Graduate Student
MEMBER5	Graduate Student
MEMBER4	Graduate Student
MEMBER3	Graduate Student
MEMBER2	Director / Co-Principal Investigator
MEMBER1	Professor / Co-Principal Investigator



› Email visualizations represent the archive of virtual work and record of communication between distributed team members (figure 1 and figure 2).

› During interviews we describe the email visualizations to our participants. Then, we ask participants questions about the accuracy of the data represented, the types of activities that we visualize, and overall how seeing email communication over time in a visualization helps the participant reflect on their work and elicit insights about work practices.

› We obtained greater insights to the nature of the work that was being conducted on email, the role of each team member relative to the work, and the rhythms of research work over time. We also better understood the management style of the PI's, the hierarchy of members, and the teams offline activities such as attending conferences, face-to-face meetings, and time spent on a project task.

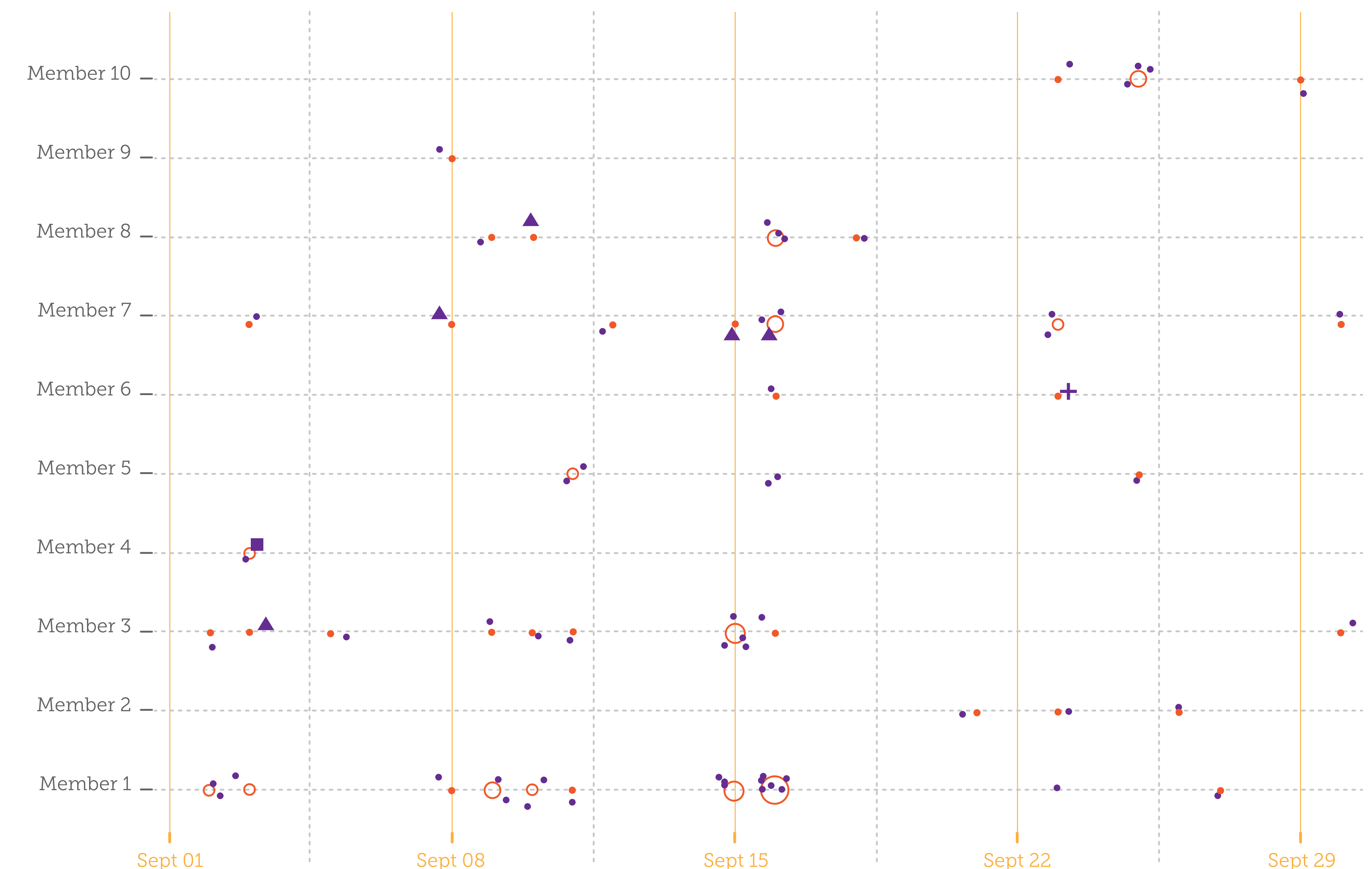


FIGURE 1 Frequency of emails and attachments by members in September 2014

factor (numEmails) 1 2 3 4 7 factor (numAttach) 0 1 2 3

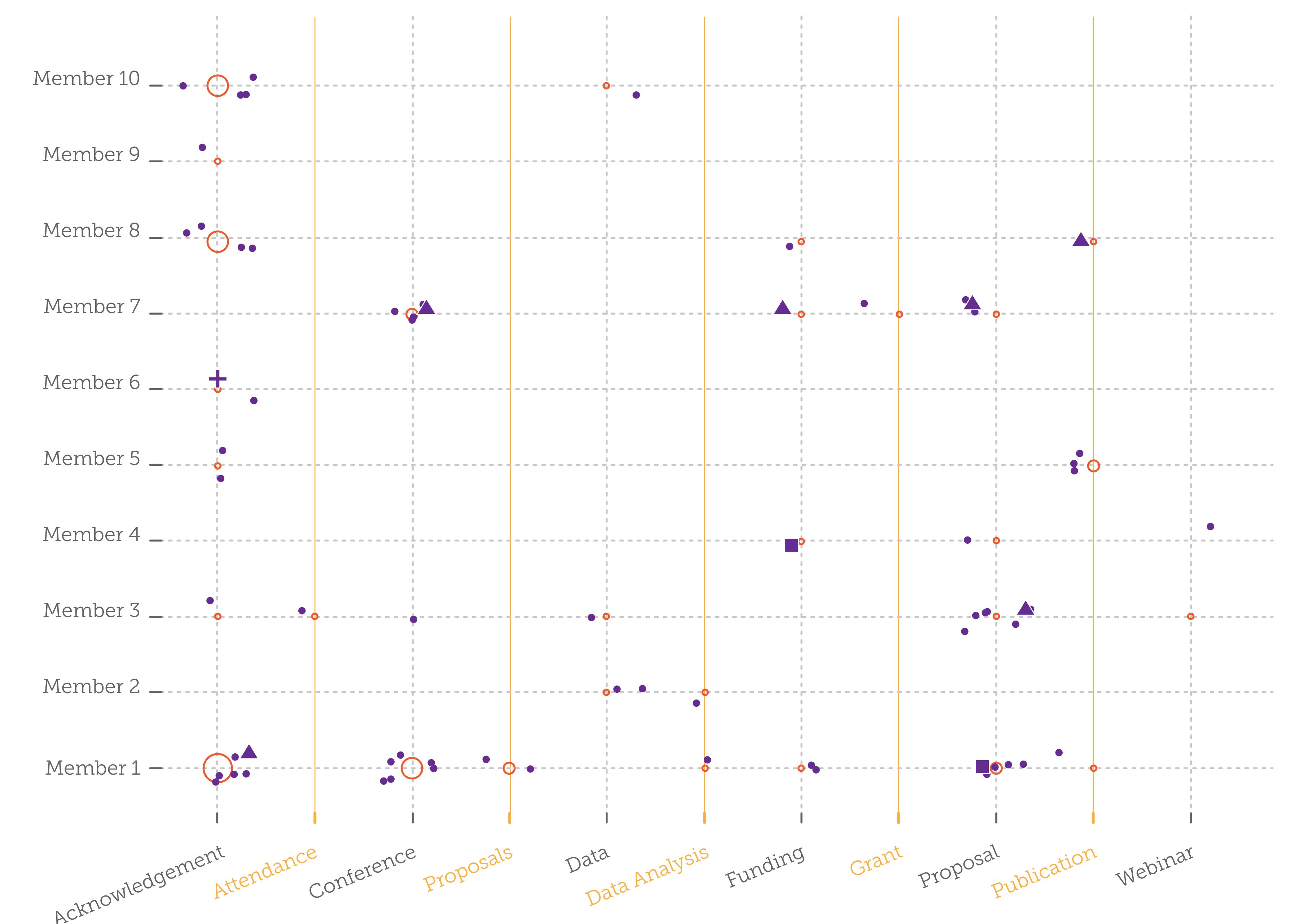


FIGURE 2 Frequency of emails associated with scientific practice of emails in September 2014

factor (numEmails) 1 2 3 4 factor (numAttach) 0 1 2 3

## DISCUSSION

› A visualized record of online work serves as a qualitative artifact to understand how distributed teams organize, communicate, and accomplish collaborative work. Visualizations may elicit understanding of the social dynamic of the teams along with offline work.

› Email visualization, in conjunction with the interview protocol, has shown to provide a novel way to triangulate findings.

› We are interested in how email visualization methodology, and using it for qualitative and ethnographic inquiry, may be extended to other asynchronous technical mediums.