

Comparing Development Practices in *npm* Subcommunities

Hannah Reiling, Chris Bogart, Christian Kästner, Jim Herbsleb

Research Question

Do developers' practices differ across subcommunities in *npm*?

Introduction

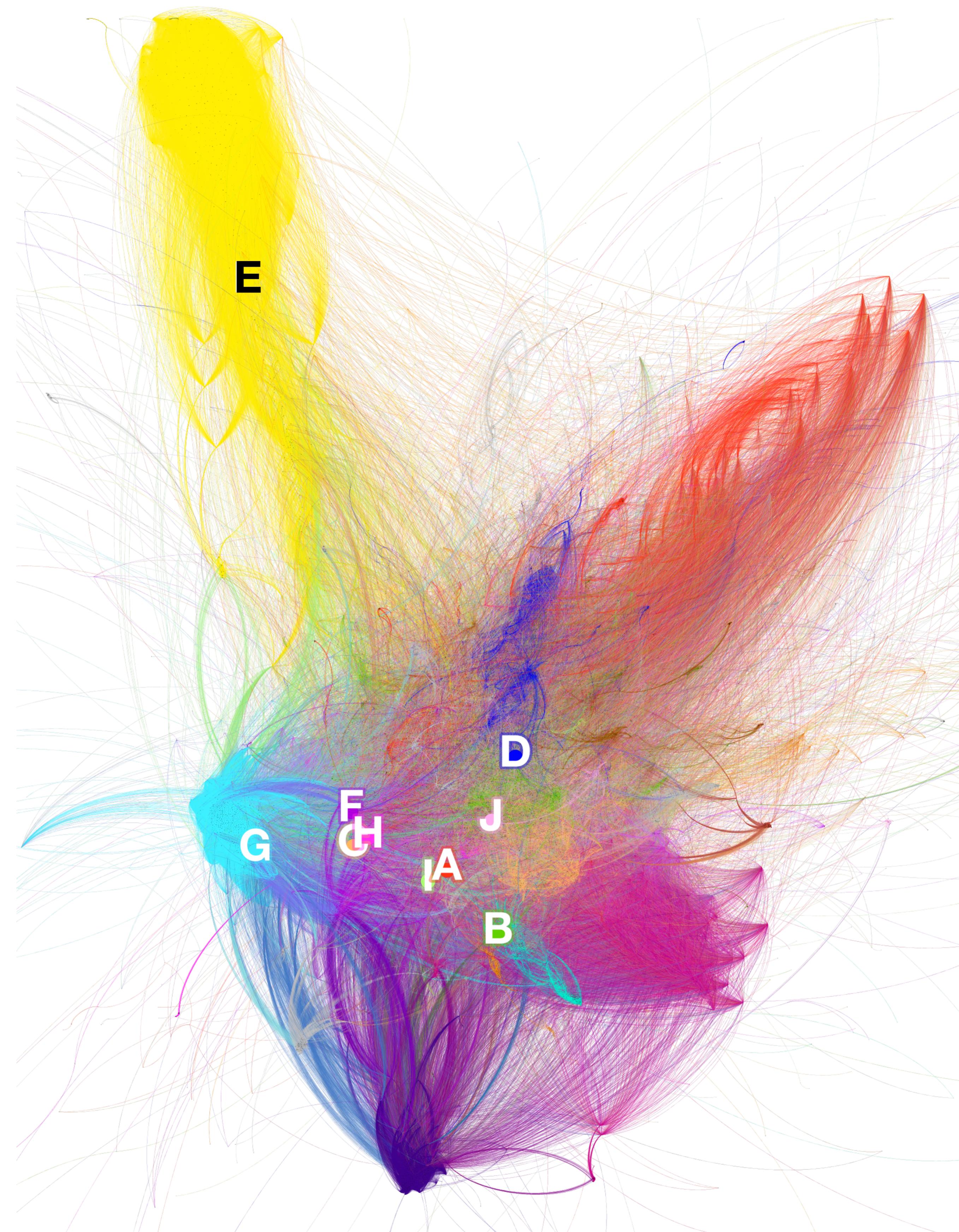
In this project, we identify subcommunities within Node Package Manager (*npm*), an Open Source Software ecosystem, and compare development practices across these subcommunities. These insights will allow a greater understanding of how practices propagate throughout ecosystems, which is useful for developers and companies who want to understand the characteristics of successful ecosystems and what defines communities.

Approach

- Collected data for each documented *npm* package to gain insights about development practices
- Created graph for top 25,000 most downloaded *npm* packages, with links between packages with common GitHub committers, which is visualized below
- Used network analysis software (Gephi) to perform community detection on generated graph, specifically using a community detection method for large networks (Louvain Method)



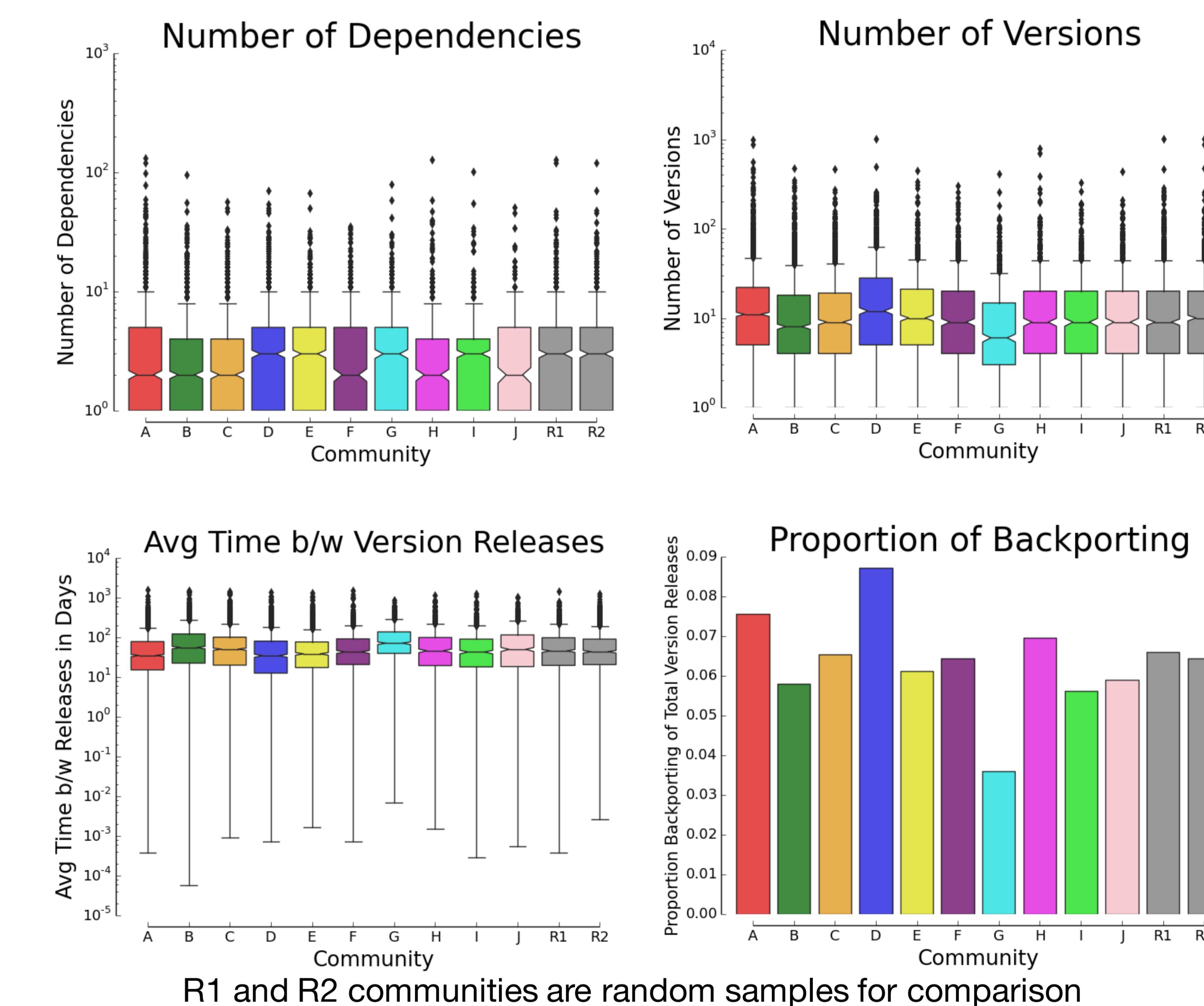
Results



This is a visualization of subcommunities in *npm*, with packages as nodes and common committers as edges. Each color represents a different subcommunity as detected by the Louvain Method for community detection. The letters (A-J) represent the ten largest subcommunities in *npm*, specifically showing the most central node (by highest eigenvector centrality) for each subcommunity.

Most Central *npm* Packages by Subcommunity

ID	Top Packages	ID	Top Packages
A	colorguard, hypher	F	eslint, 6to5
B	less, css	G	pngout-bin, imagemin-pngcrush
C	tar-stream, virtual-dom	H	grunt-critical, get-parameter-names
D	connect, sqlite	I	mini-lr, soap-ntlm-2
E	ember-cli-app-version, ember-flatpicker	J	http-proxy, cloudant



Next Steps

- Use manual clustering strategy to compare practices
- Survey *npm* developers to see if they identify as a member of a subcommunity and if practices differ across these developer-identified subcommunities