2021 USENIX Security Symposium

SocialHEISTing:

Understanding Stolen Facebook Accounts

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Social Accounts

- Often publicly display demographic attributes (age, gender, location, etc.)
- Interesting contents in social accounts!
- Accumulate personal info + sentimental value over time
- Attributes can be abused by malicious parties

Goal

- Understand the effects of demographic attributes on attacker behavior in stolen social accounts
- Without harming any real users
- Distinct from general characterization of attacker behavior

How?

Pipeline

Create + populate honey accounts

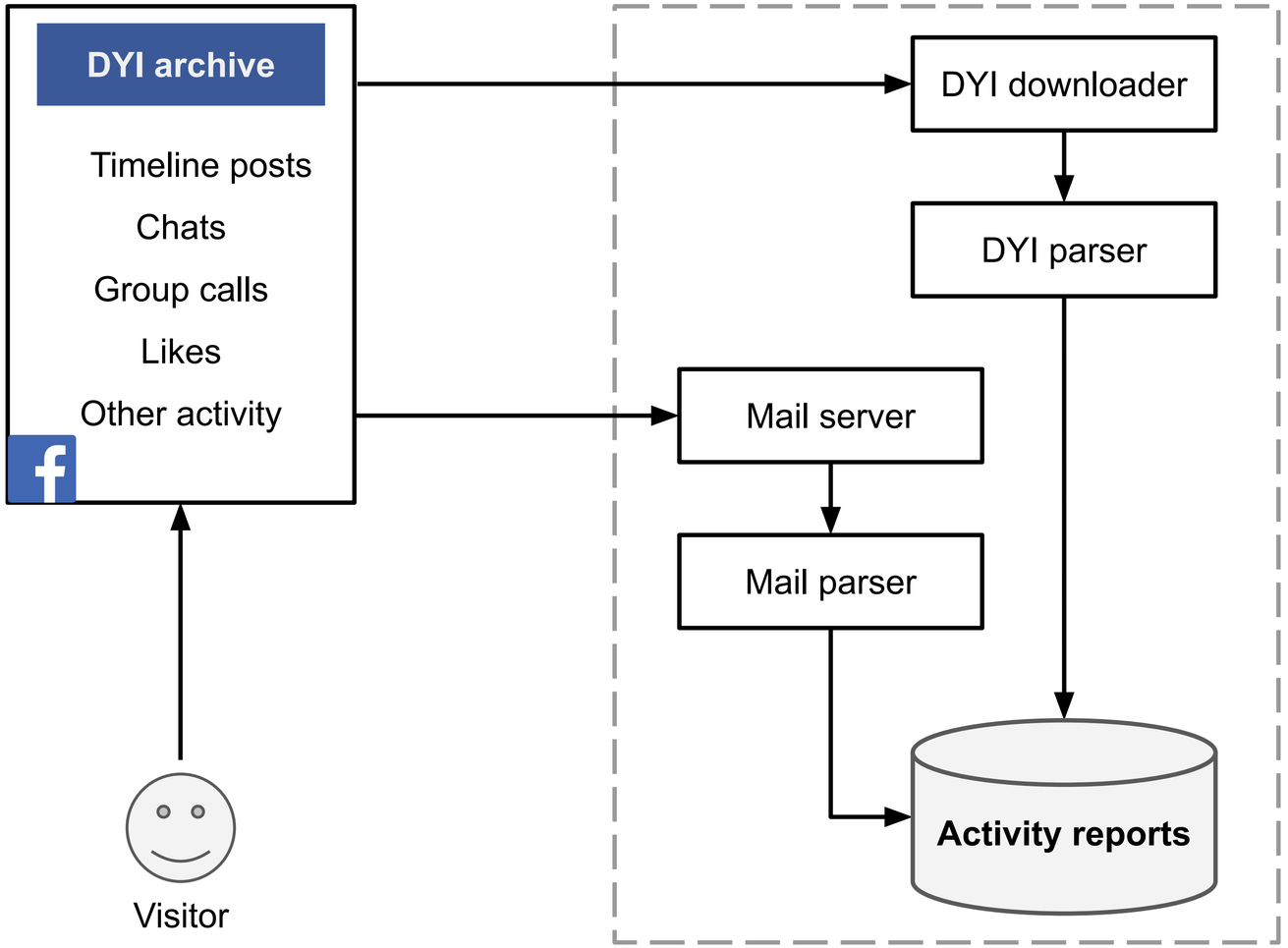
Configure monitor infrastructure

Leak honey credentials

Record + analyze data

Better understand
cybercriminal behavior

Data Collection



Setup

- 1008 realistic Facebook accounts (*age, gender* vars)
- Populated with publicly available data (sanitized)
- Leaked credentials to two-thirds of the accounts
- Via paste sites on Surface Web + Dark Web
- Monitored accounts for 6 months

Results

Actions

- 322 unique accesses to
- 284 accounts, resulting in
- 1,159 actions
- *Curious, Searcher, and Chatty* activity tops the actions table

Age of Account

Criminals...

- **Add/remove friends:** adult accounts > teen accounts
- **Edit profiles:** adult accounts < teen accounts
- **Create posts, chat:** adult accounts < teen accounts

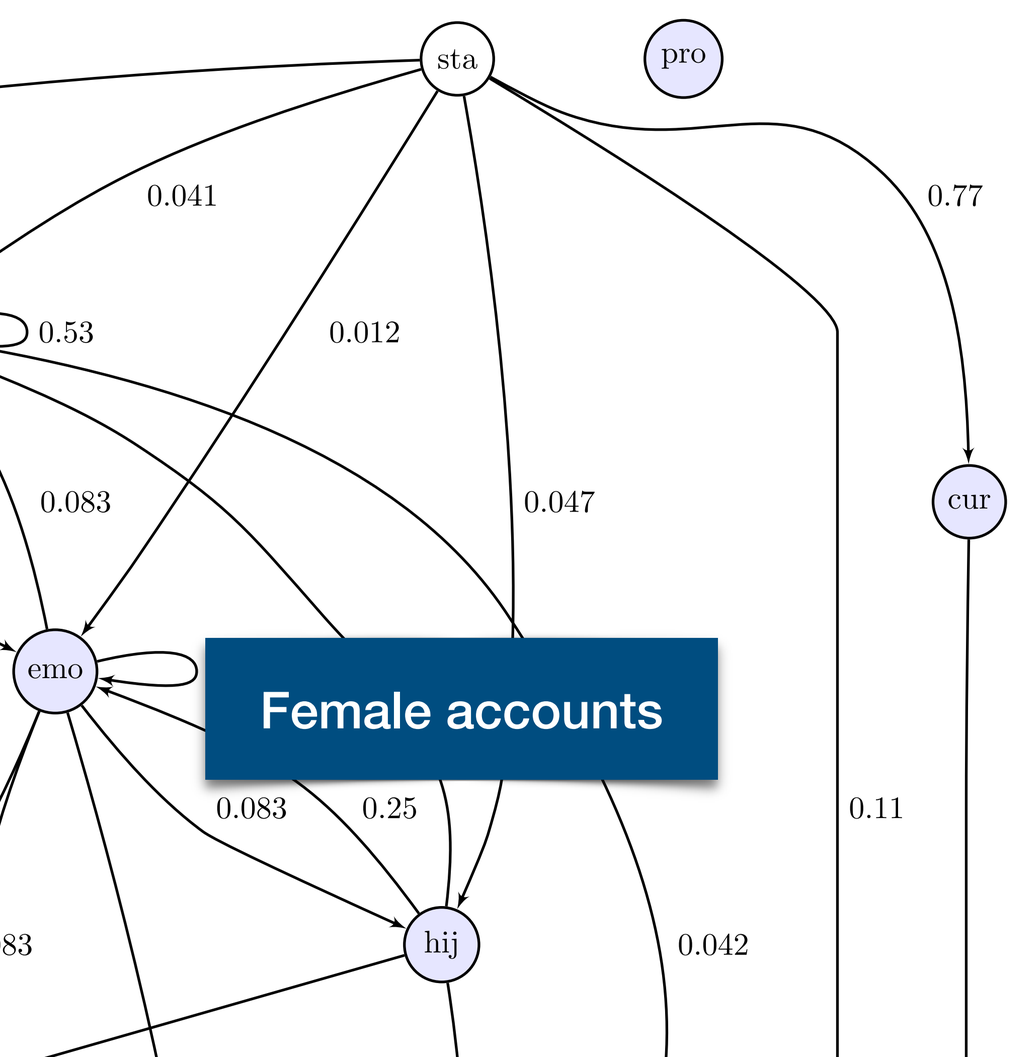
Gender of Account

Criminals...

- **Add/remove friends:** female accounts > male accounts
- **Edit profiles:** female accounts (none) < male accounts
- **Search:** female accounts < male accounts

Action Sequences

- Modeled action sequences as graphs; edge weights as probabilities of transitions
- Transitions from *action* to *other action* differed across the age and gender dimensions of victim accounts
- Illustrative example: *emo* → *cha* → *hij*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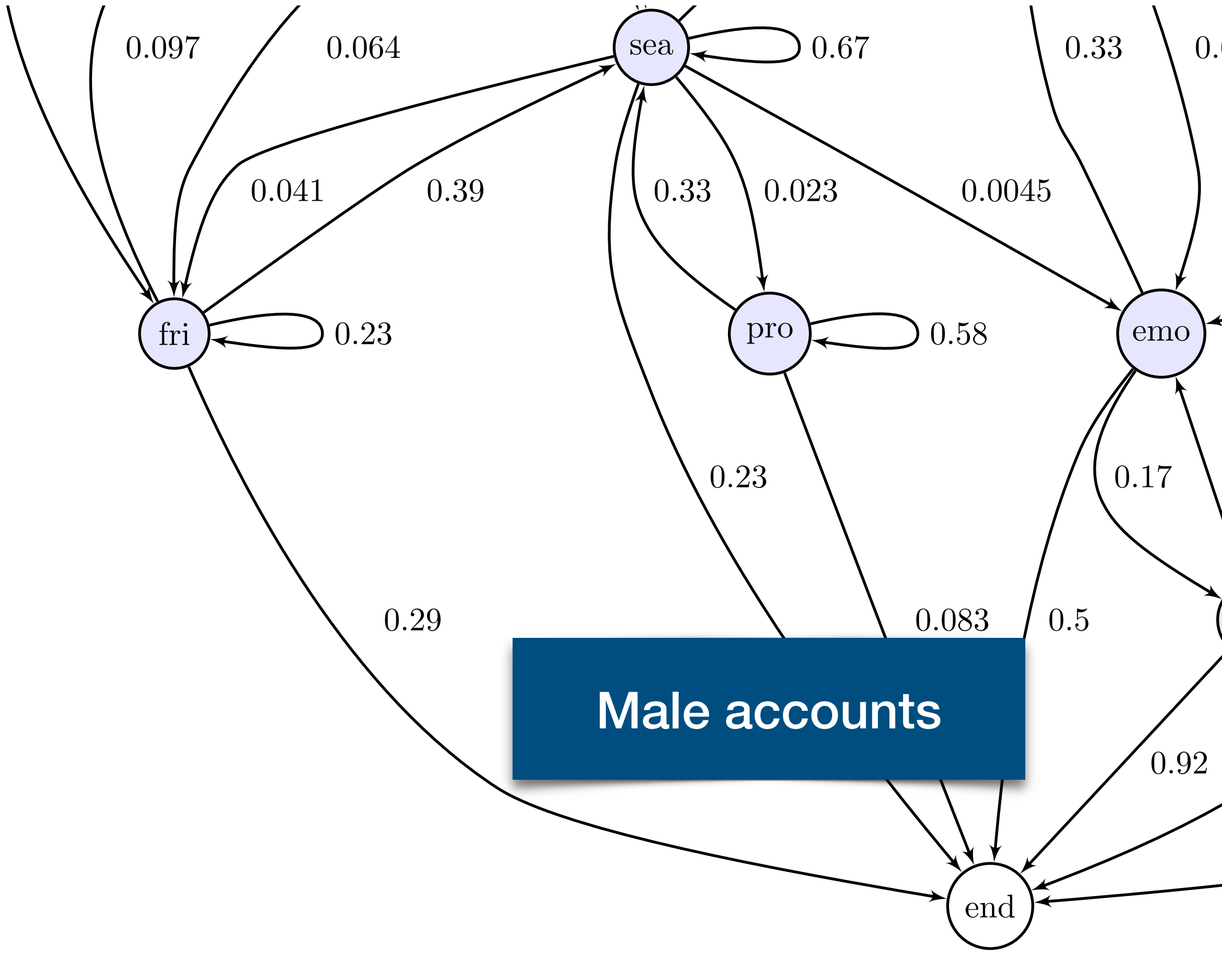
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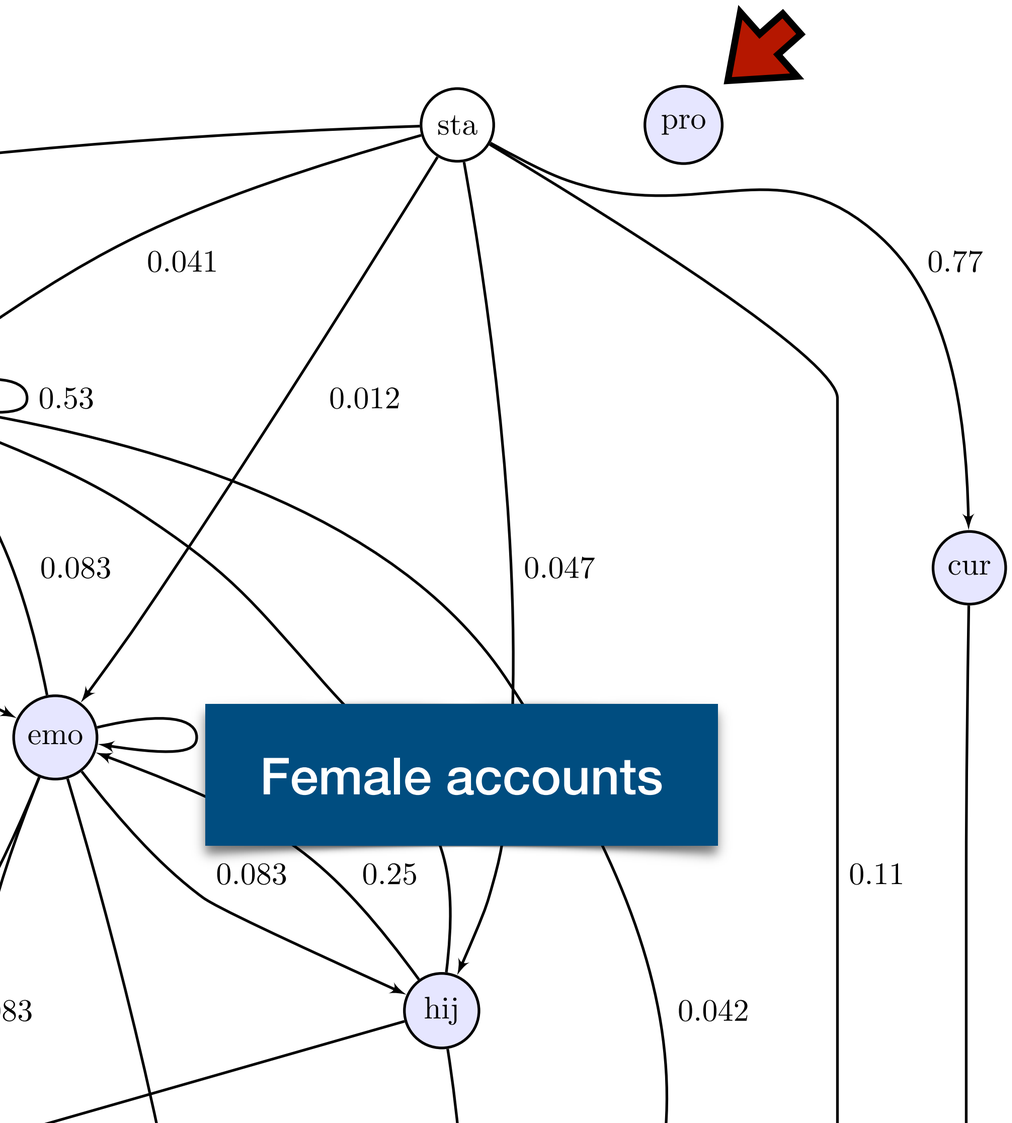
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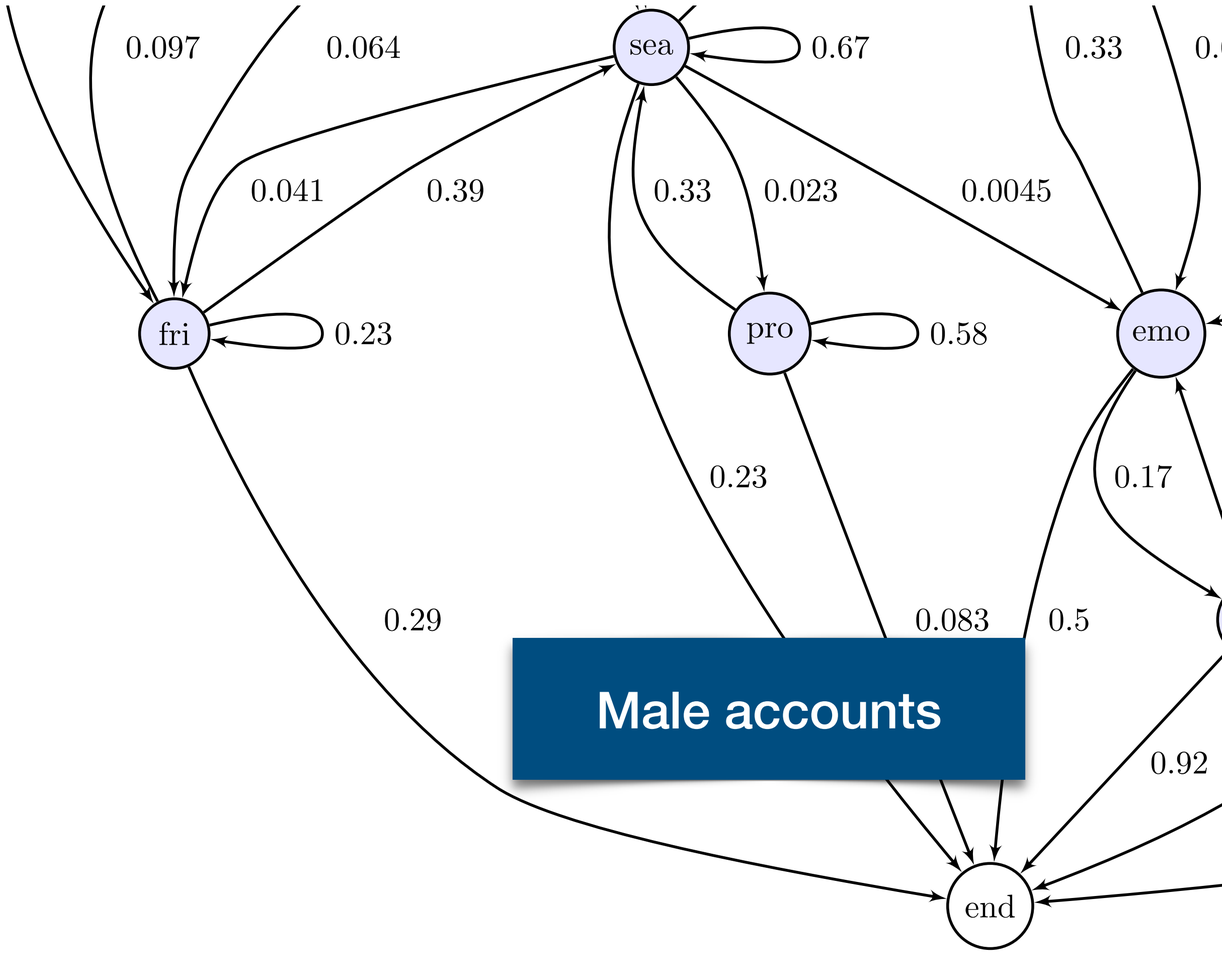
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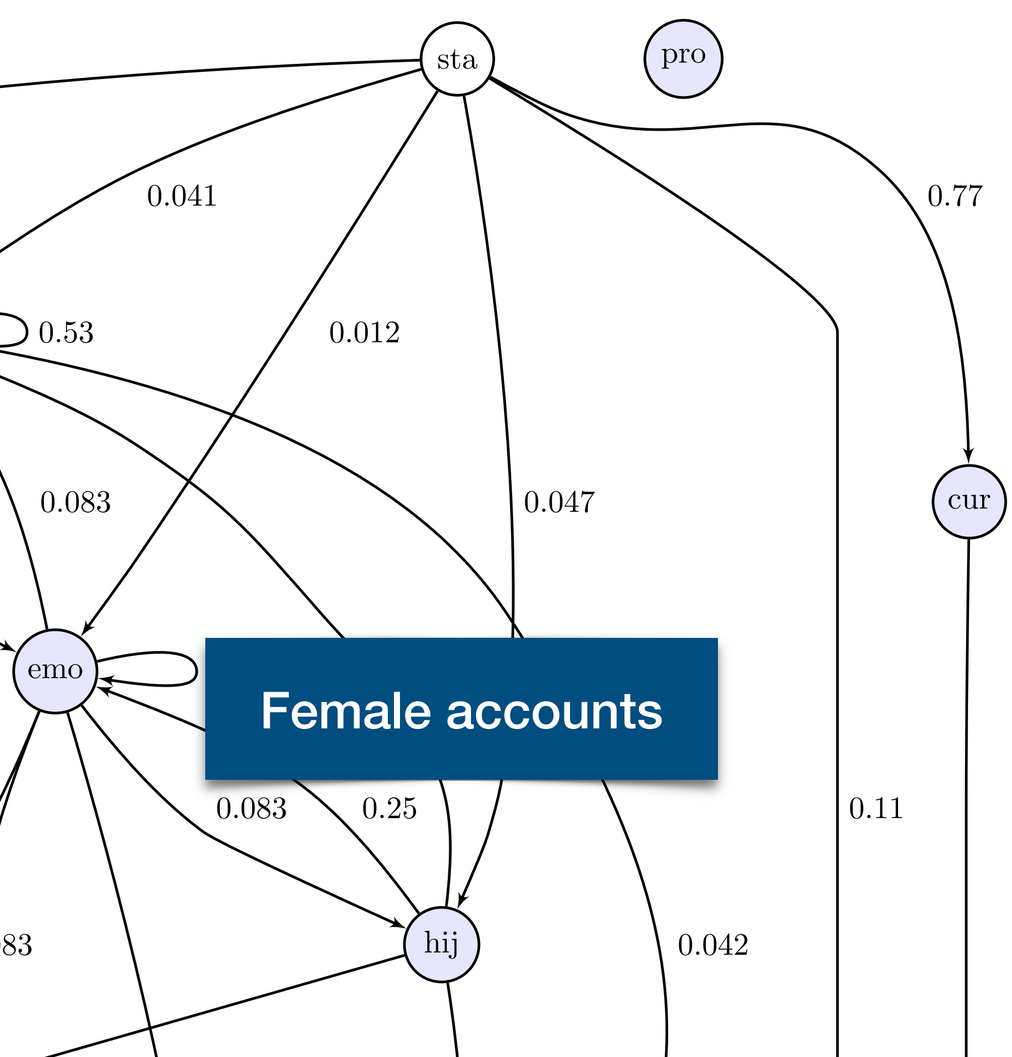
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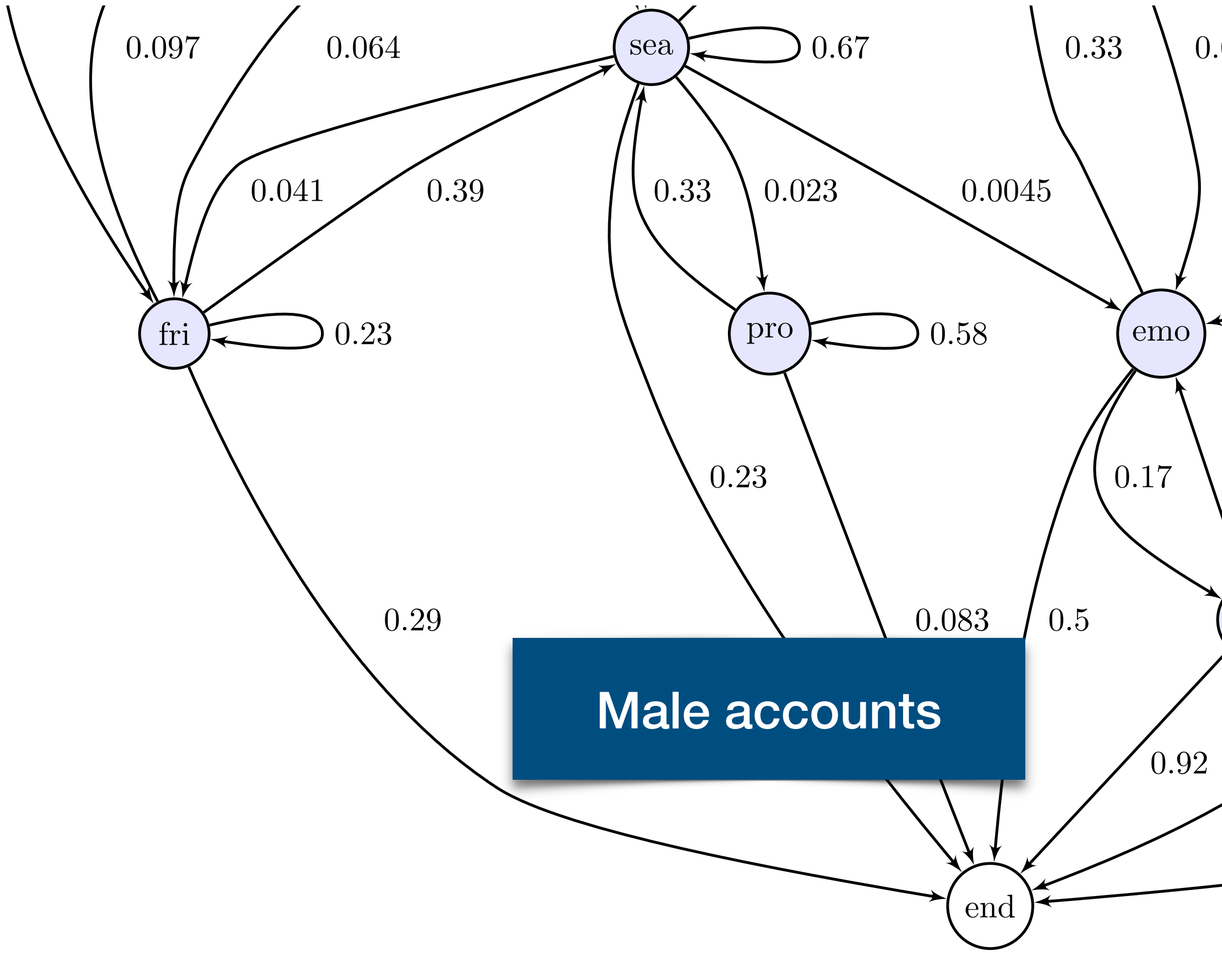
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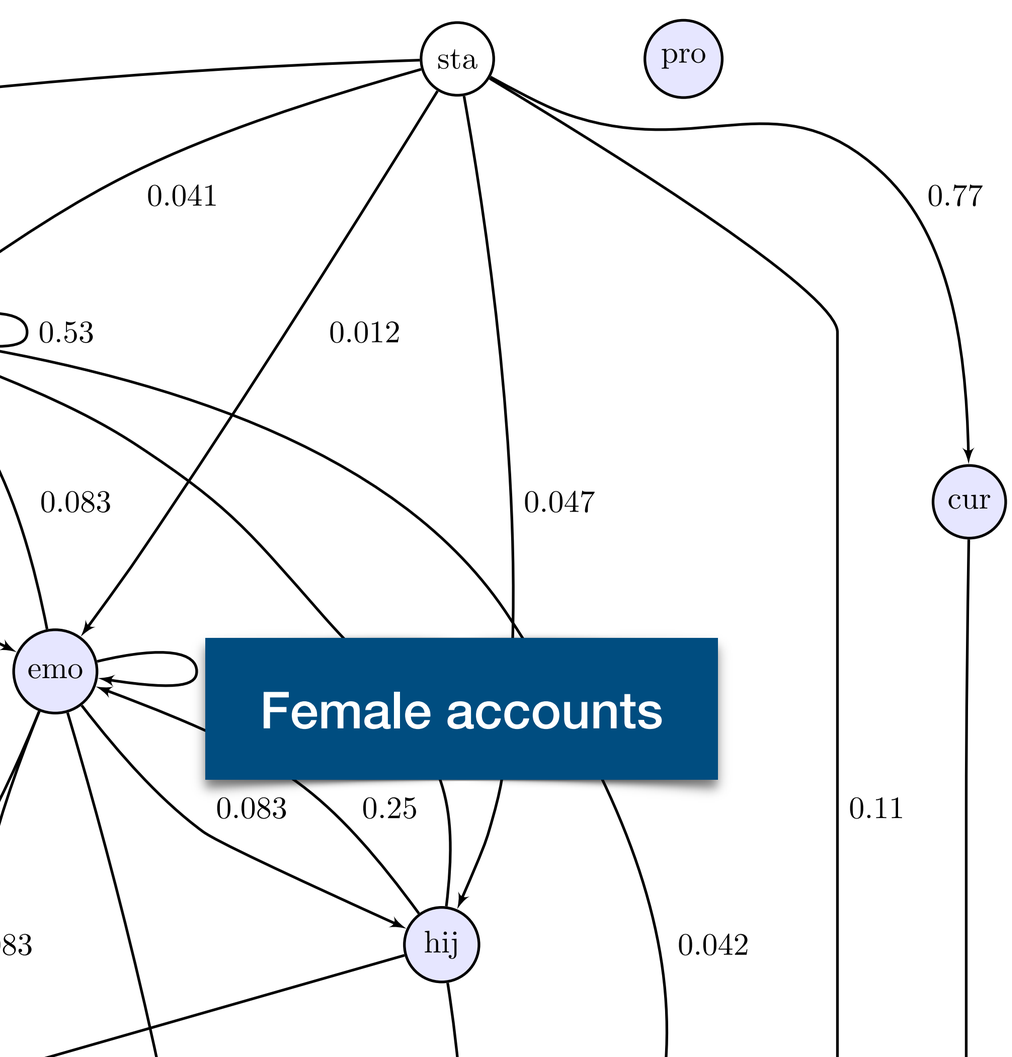
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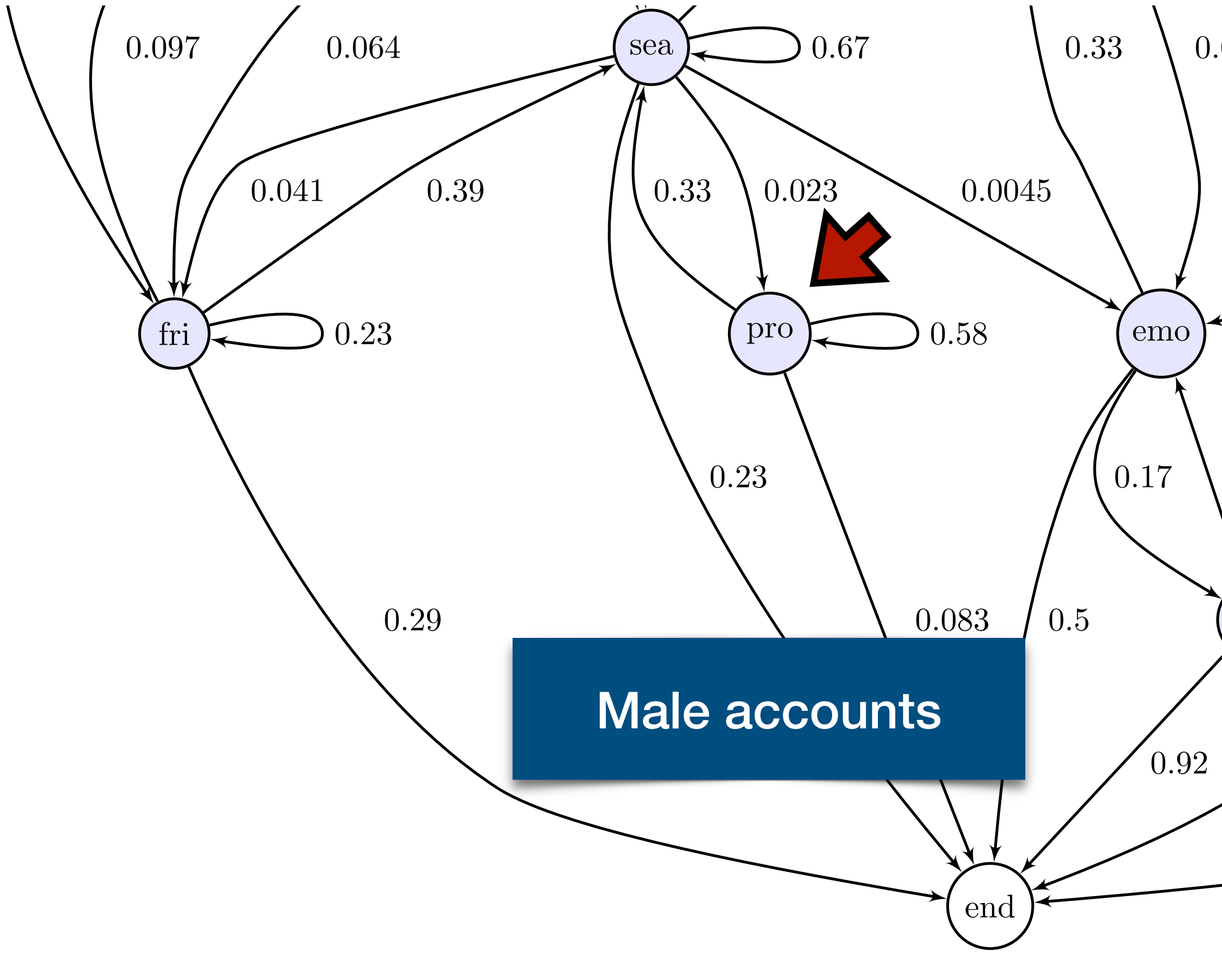
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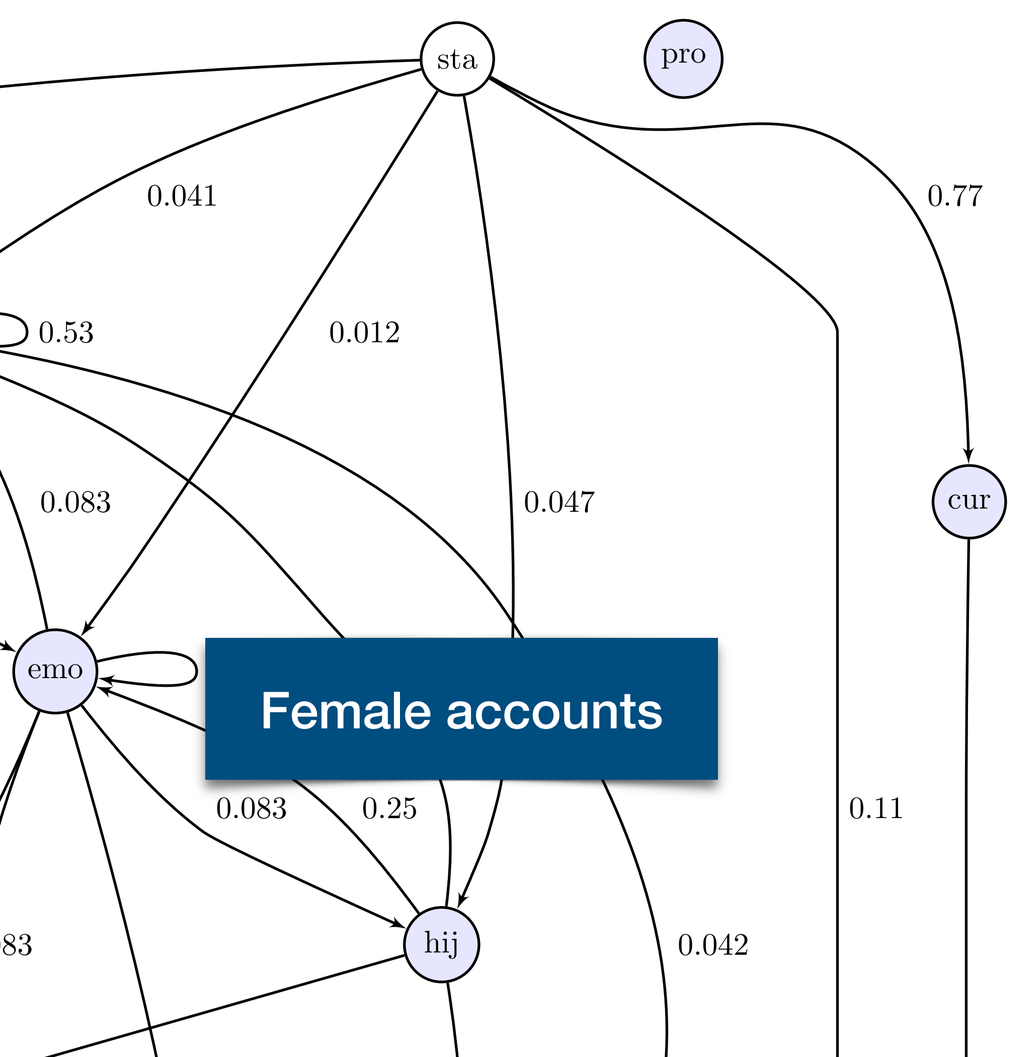
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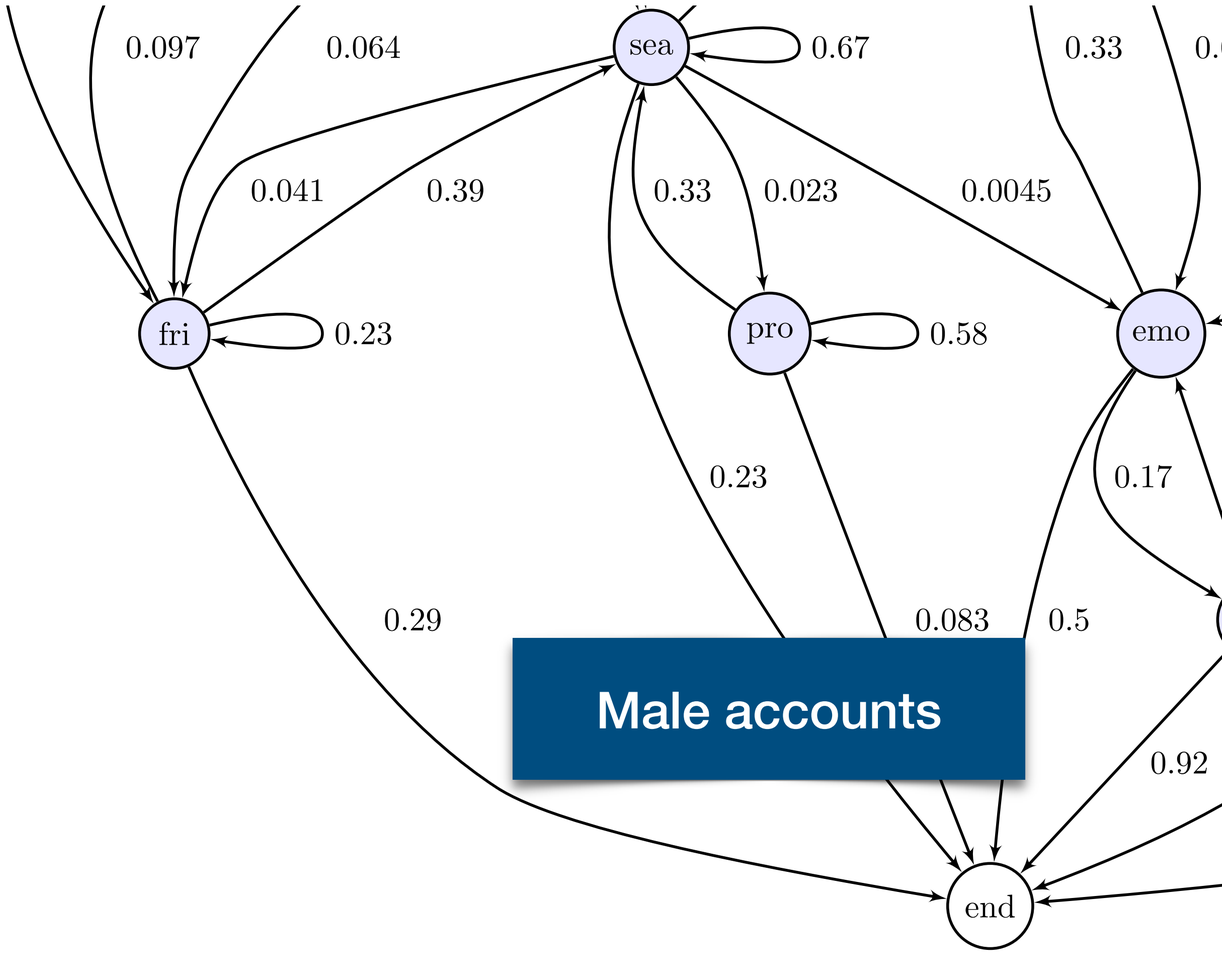
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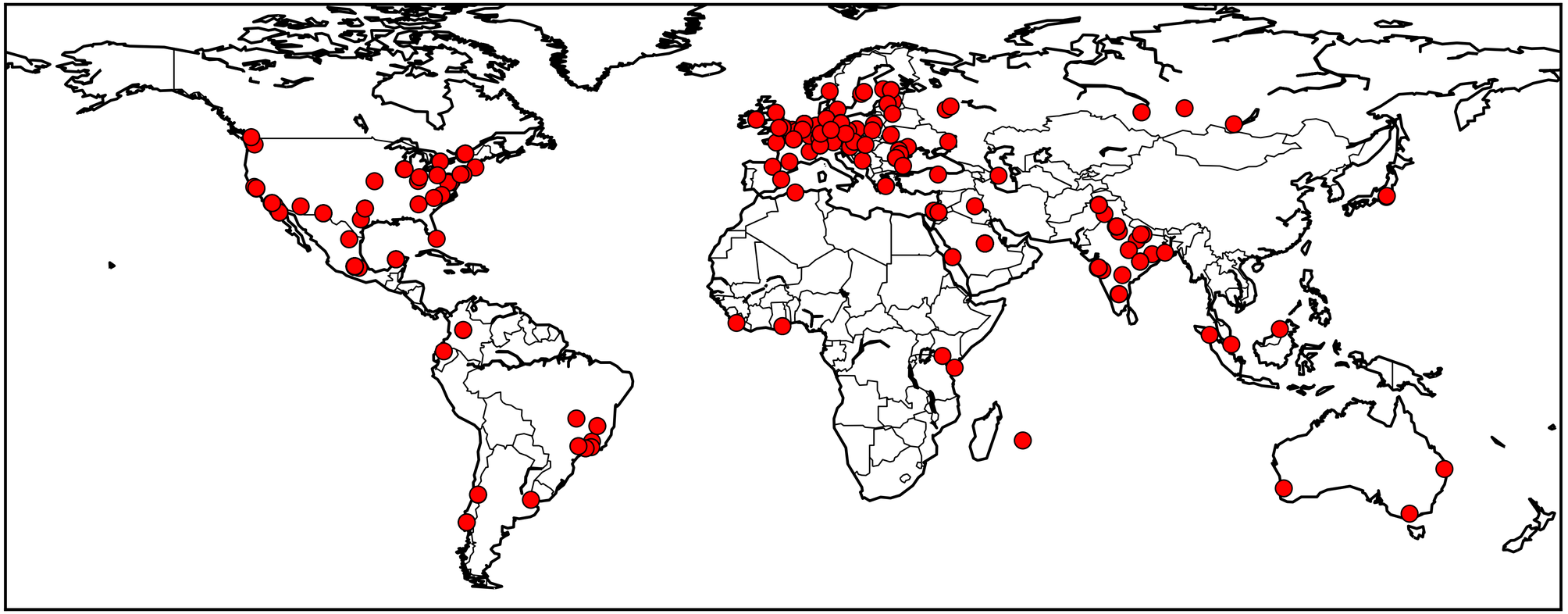
Origins of Accesses

- 415 IP addresses (a mix of IPv4 and IPv6)
- 53 countries
- 39 TOR exit nodes

Caveat: Some may be VPNs and proxies

Origins of Accesses



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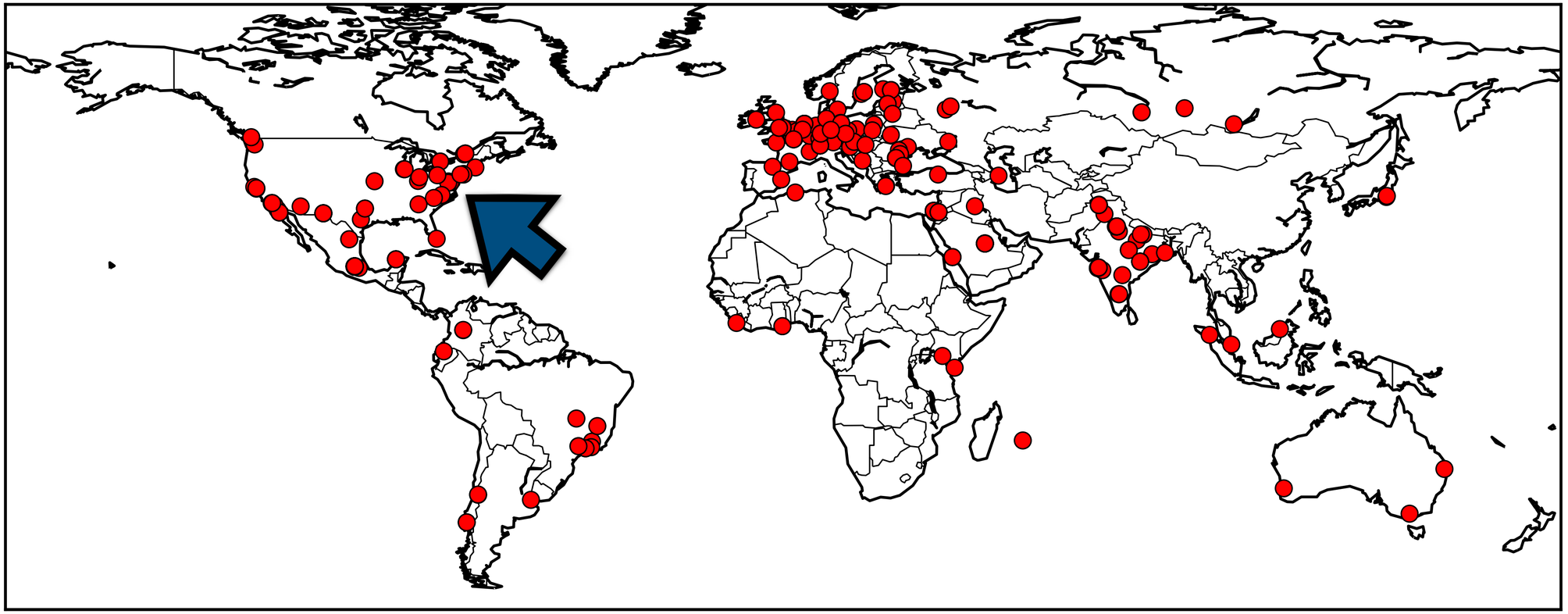

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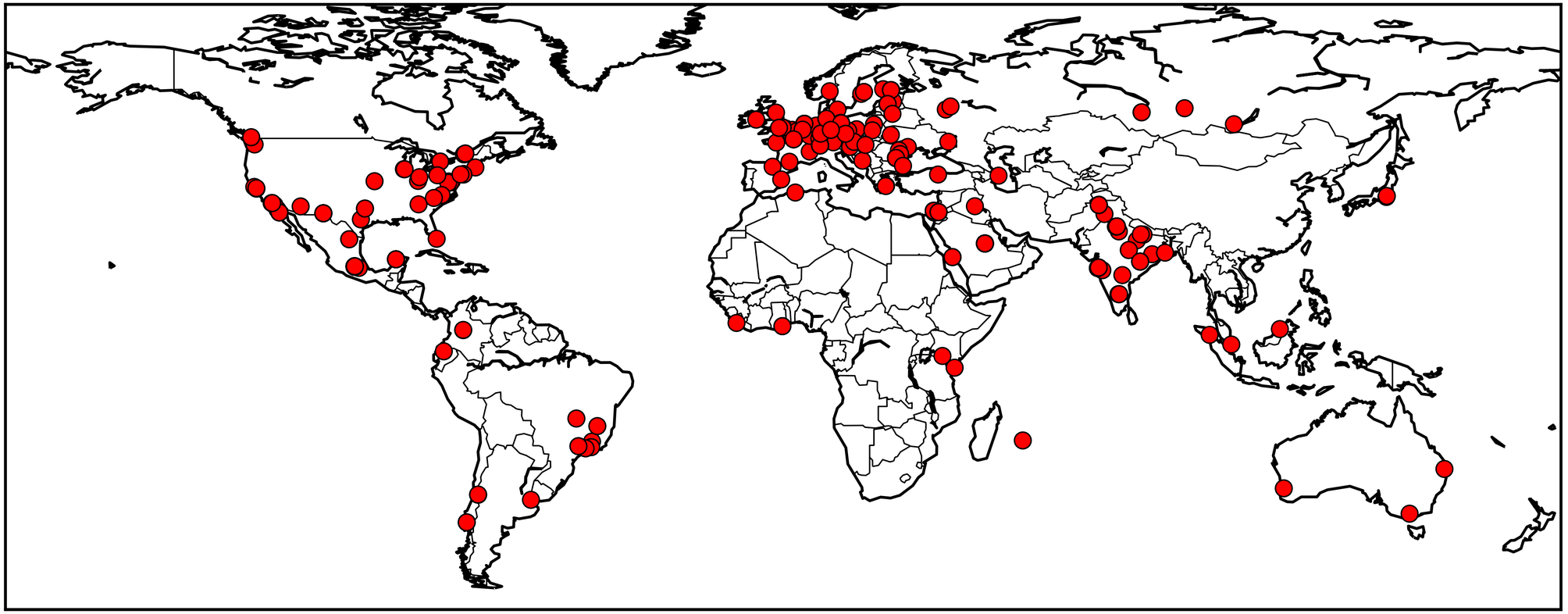

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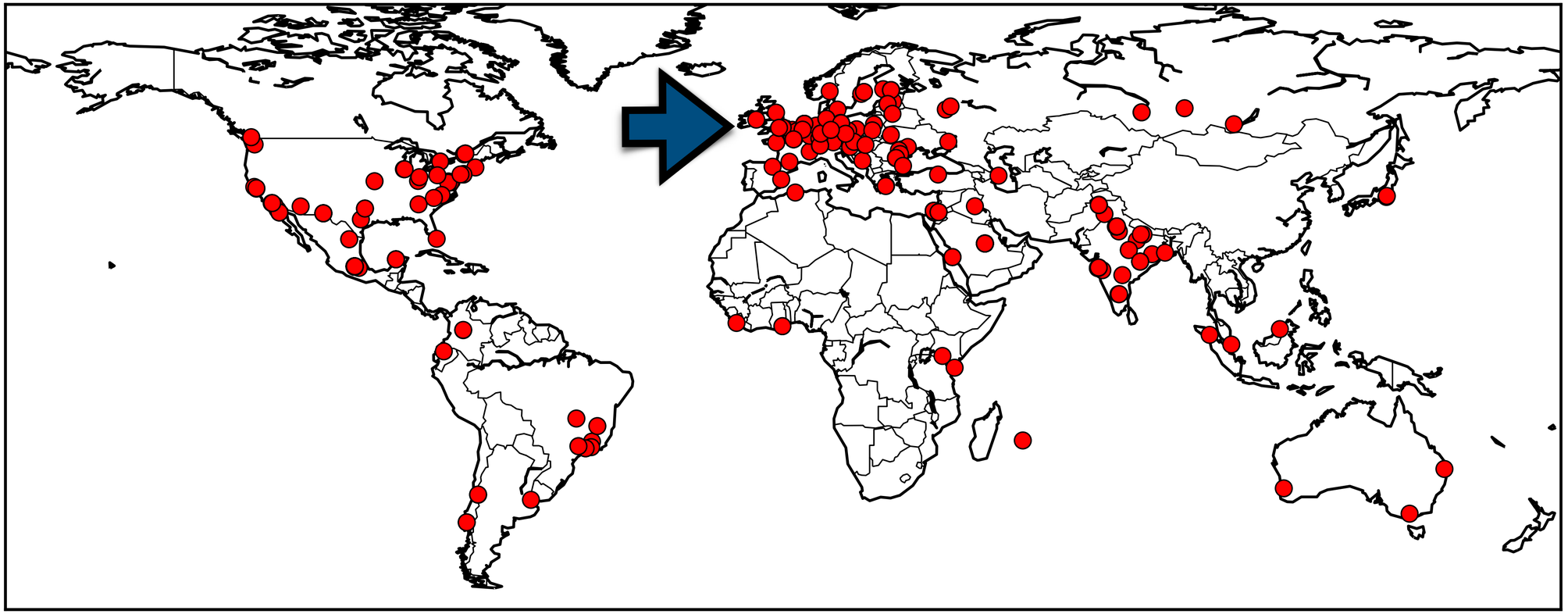

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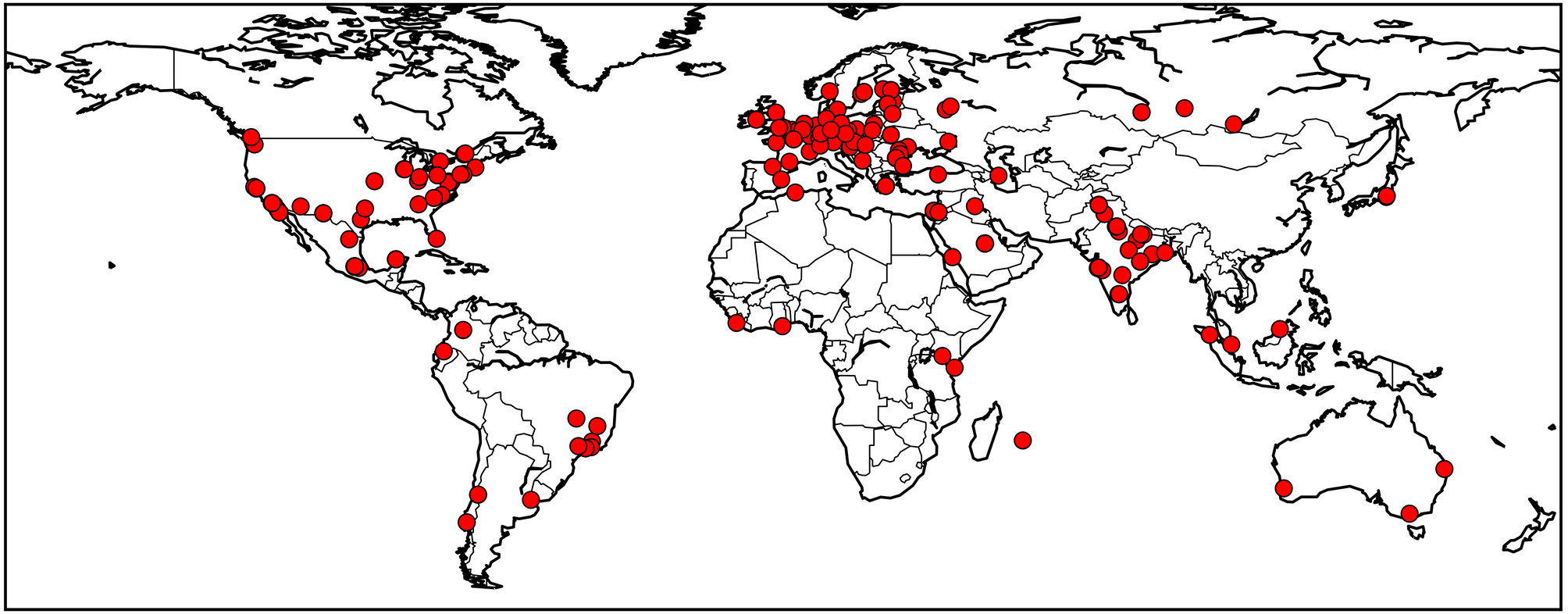

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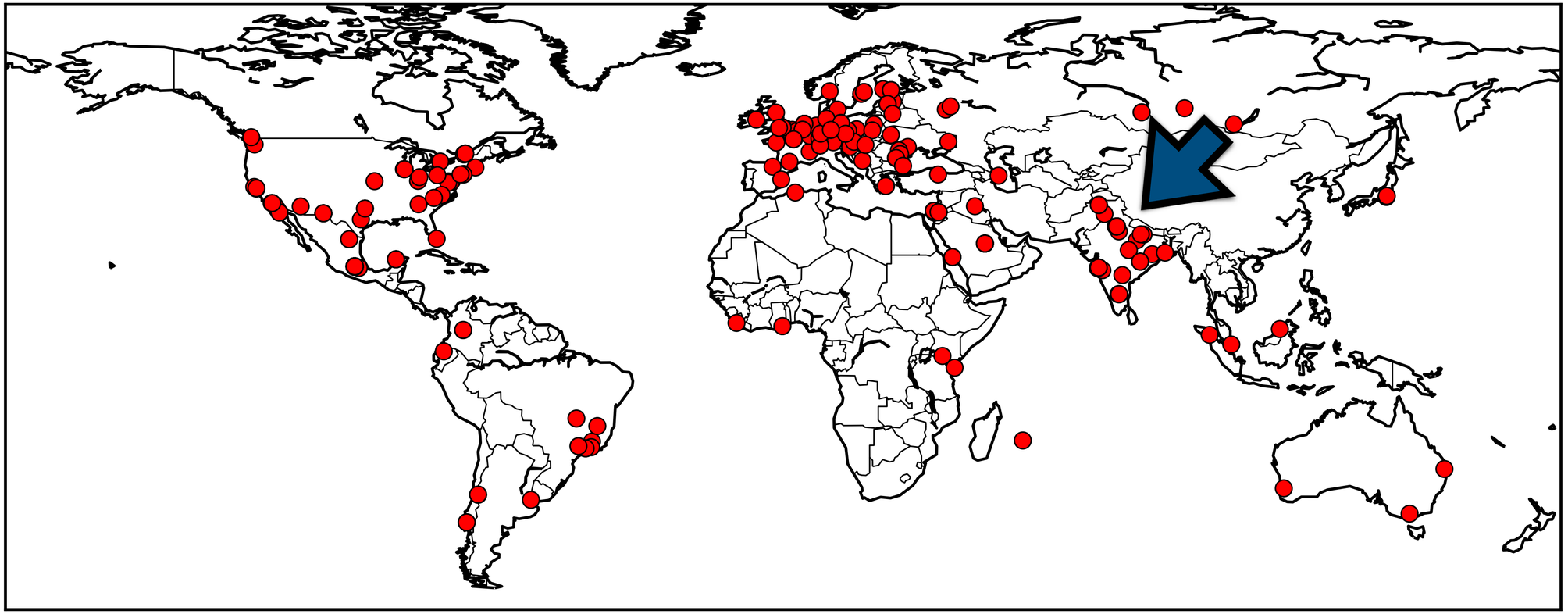

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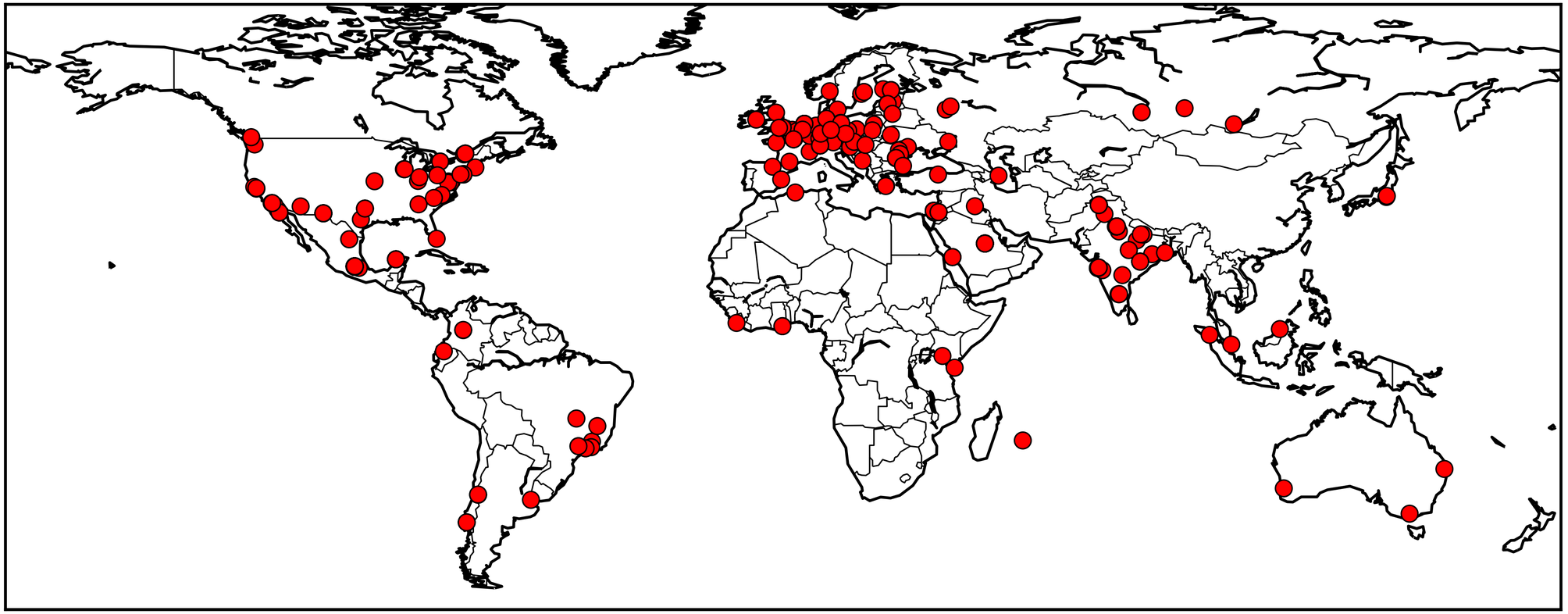

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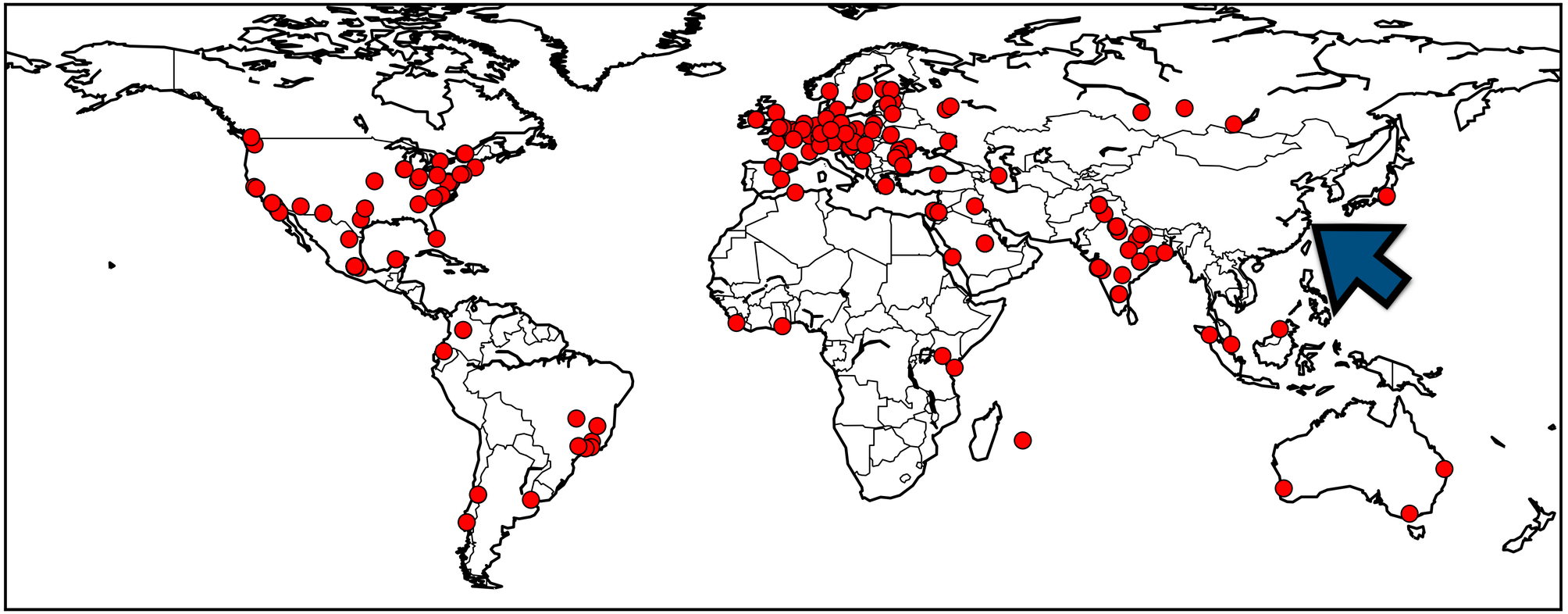

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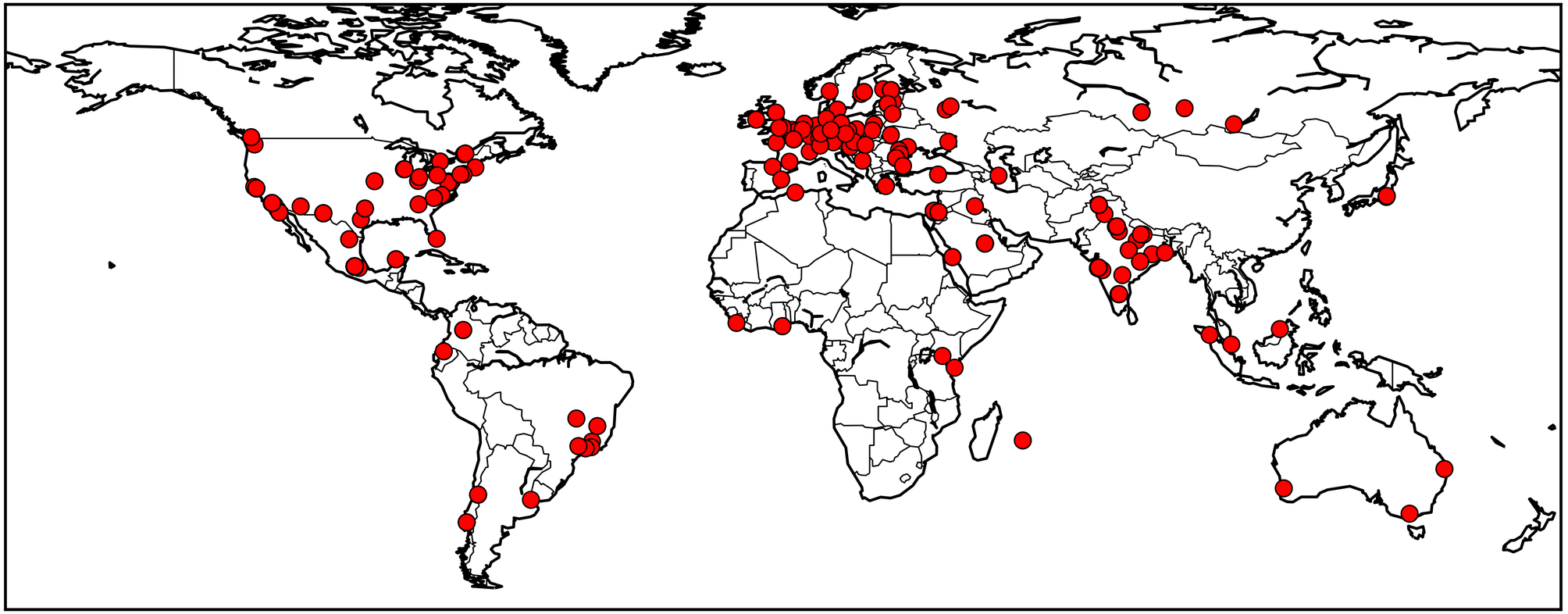

Summing Up

Implications

- Need to rethink detection and mitigation systems
- Along demographic (and other?) attributes
- More work needs to be done in this area

Ethics

- Used test accounts; isolated from regular Facebook social graph
- Used publicly available stock photos and social posts
- Facebook contacts kept an eye on the accounts
- Obtained IRB ethics approval

Thanks!

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