Making Friends And Influencing Duration
Replicating and Extending Brian Phillips' "Terrorist Group Cooperation and Longevity" (2014)
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Introduction

Phillips' Research Question

Does increasing the number of allies that a terror group has increase the group's duration?

Motivation for Extension

What if *who* a group is allied with matters more than the overall count of allies?

Replicated and Alternative Models

Problem

The model that Phillips estimated can not be applied to an expanded dataset that includes additional network information. Several independent variables are collinear with homophilic attributes of the alliance networks.


Overlap in Coefficient and 95% CI Range Across Full and Limited Model
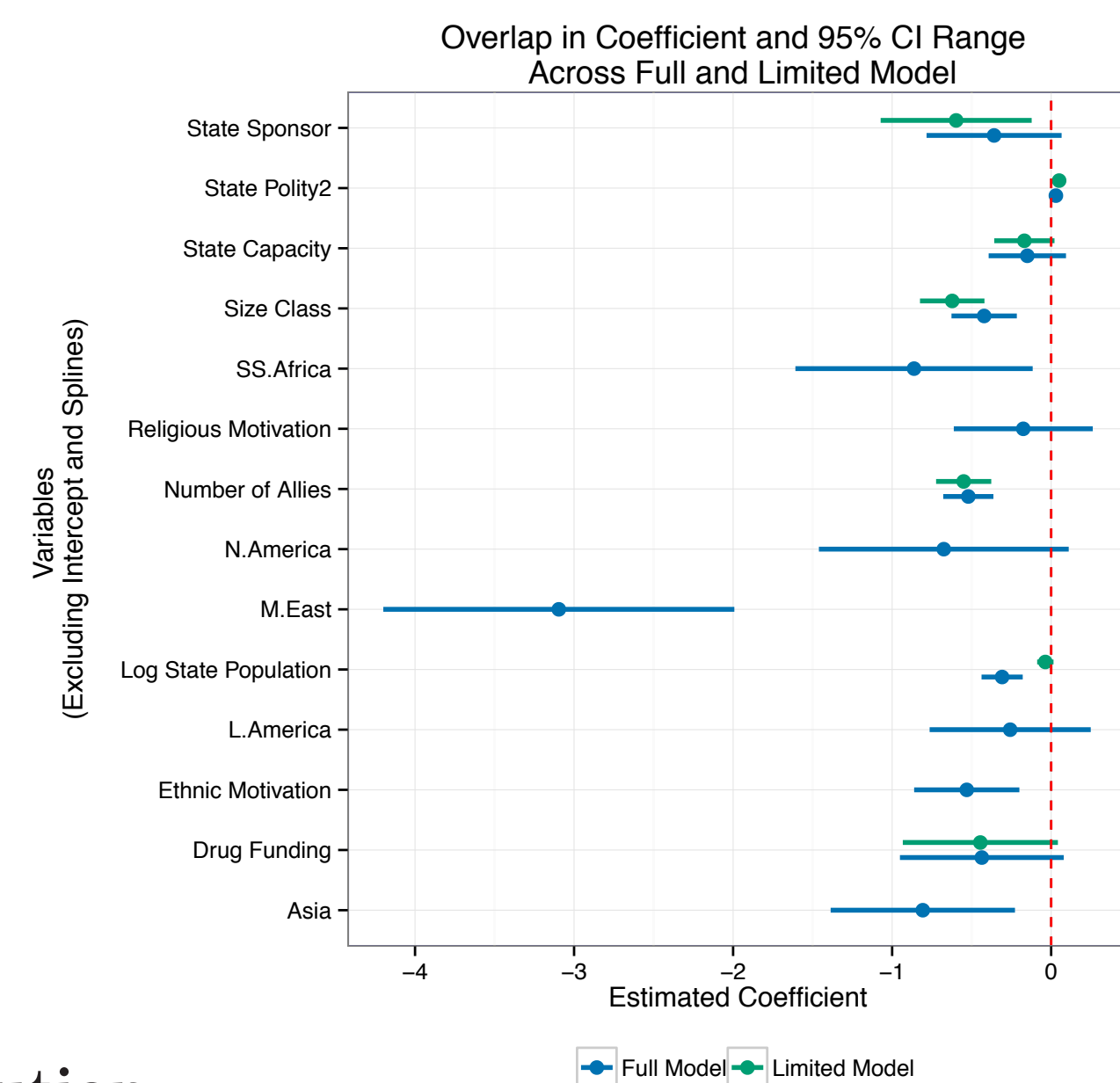
Solution

The parsimonious model is consistent across five of the six independent variables, with the most impactful difference occurring for the logged state population. Although it loses the impact of regional dummies and religious motivation, the limited model allows for inclusion of community attributes.

Marginal Effects of Allies in Base Model

The graph below shows the changes in predicted probability of failure as number of allies increases for group-years at the beginning and end of each data collection wave.
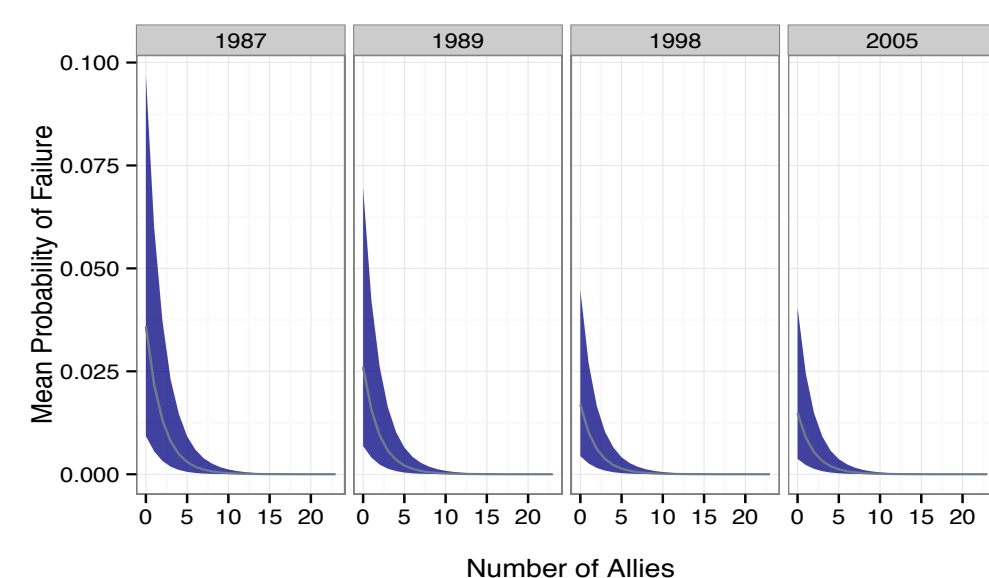

Robustness of the Allies Model

The coefficient plots below indicate general robustness to testing the Allies model on randomly-selected folds of the data. However, the ROC plots indicate that performance of the "Allies" model is sensitive to group inclusion. AUC values for the out-of-sample data generated by the cross-validation range from 0.72 to 0.873, with an average of .804, suggesting modest predictive performance.

ROC Plots for 10-fold Cross-Validation of Allies Model

Coefficient and 95% CI Range Allies Model Replication
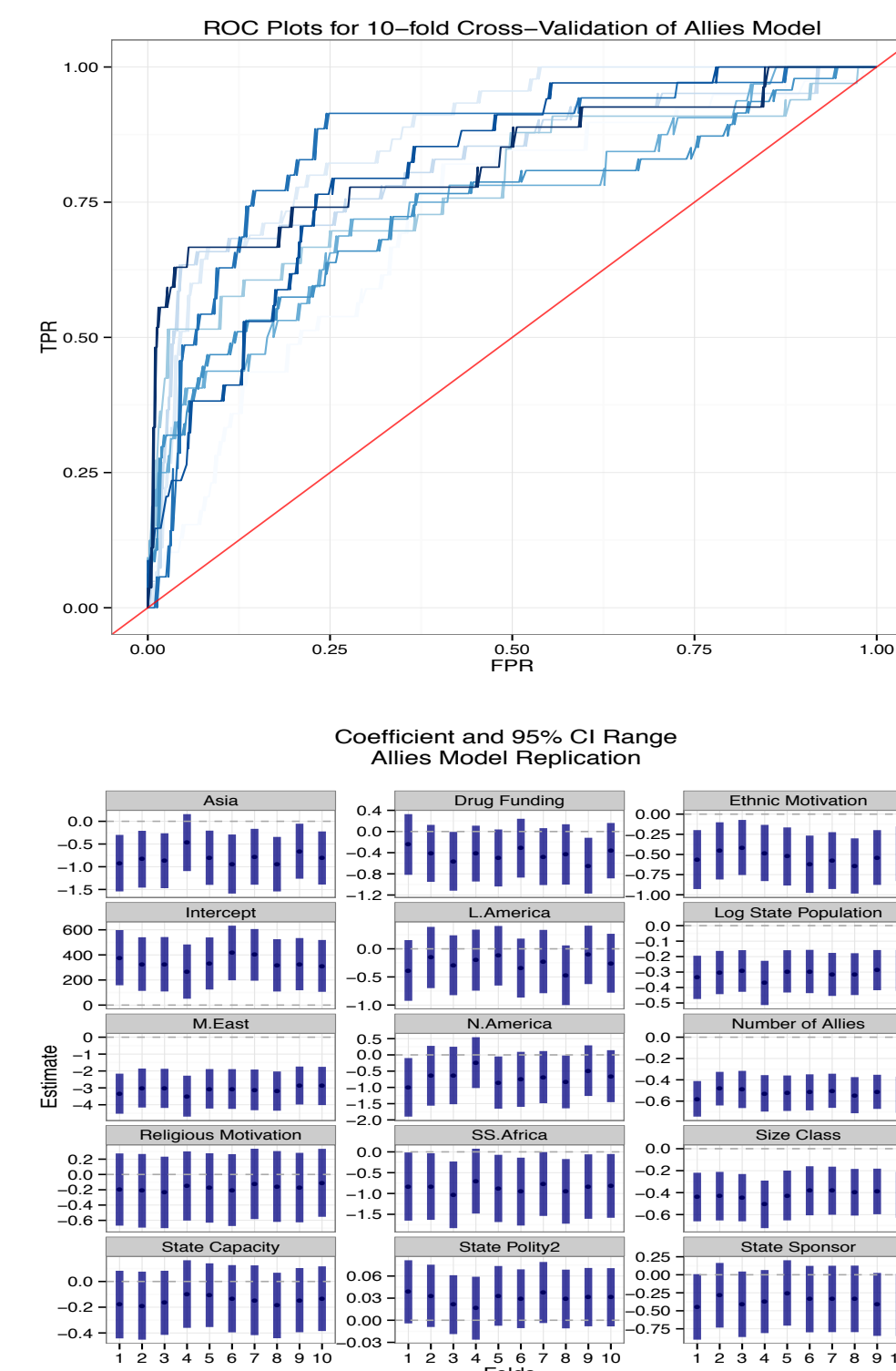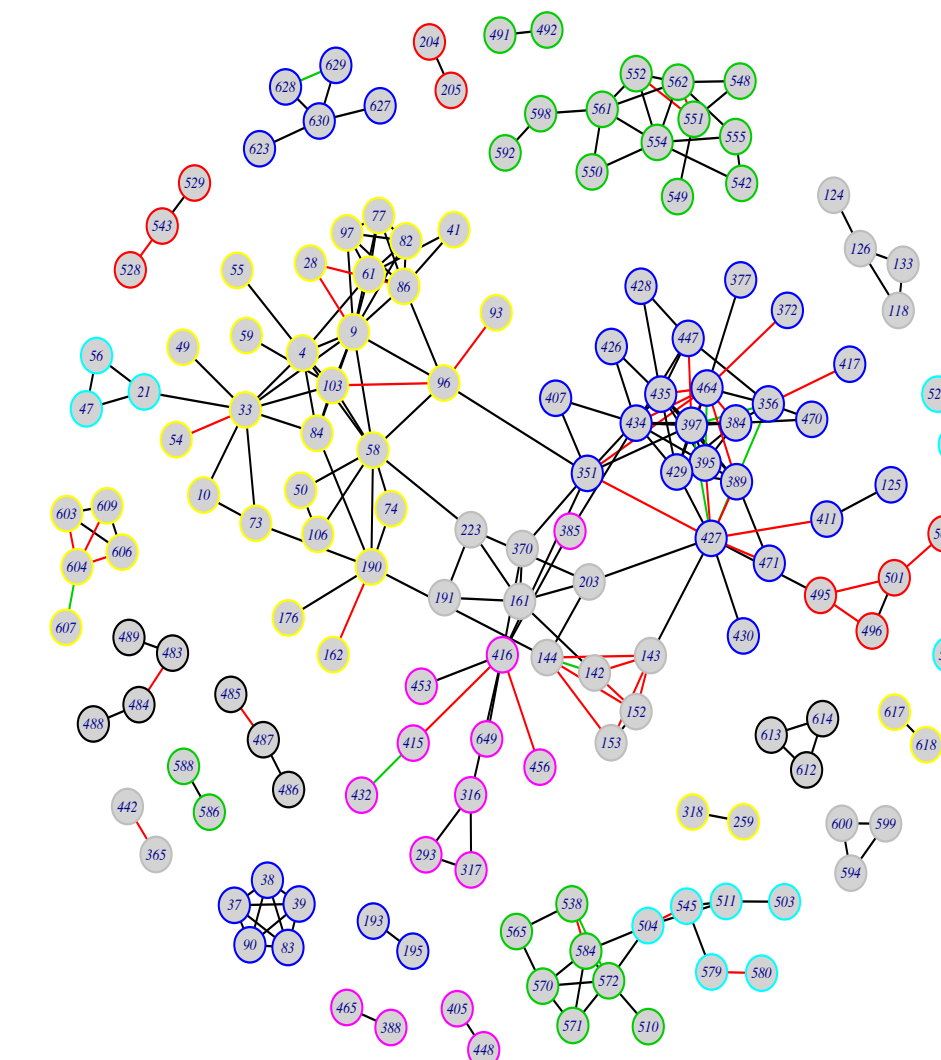
Predictive Power of the Allies Model

Despite robustness, the predictive accuracy of the model is unimpressive both in the full model and in the training sets of the cross-validation. The light blue plot is for the full data, and the darker blue separation plots represent separation plots for each of the folds of a 10-fold cross-validation.
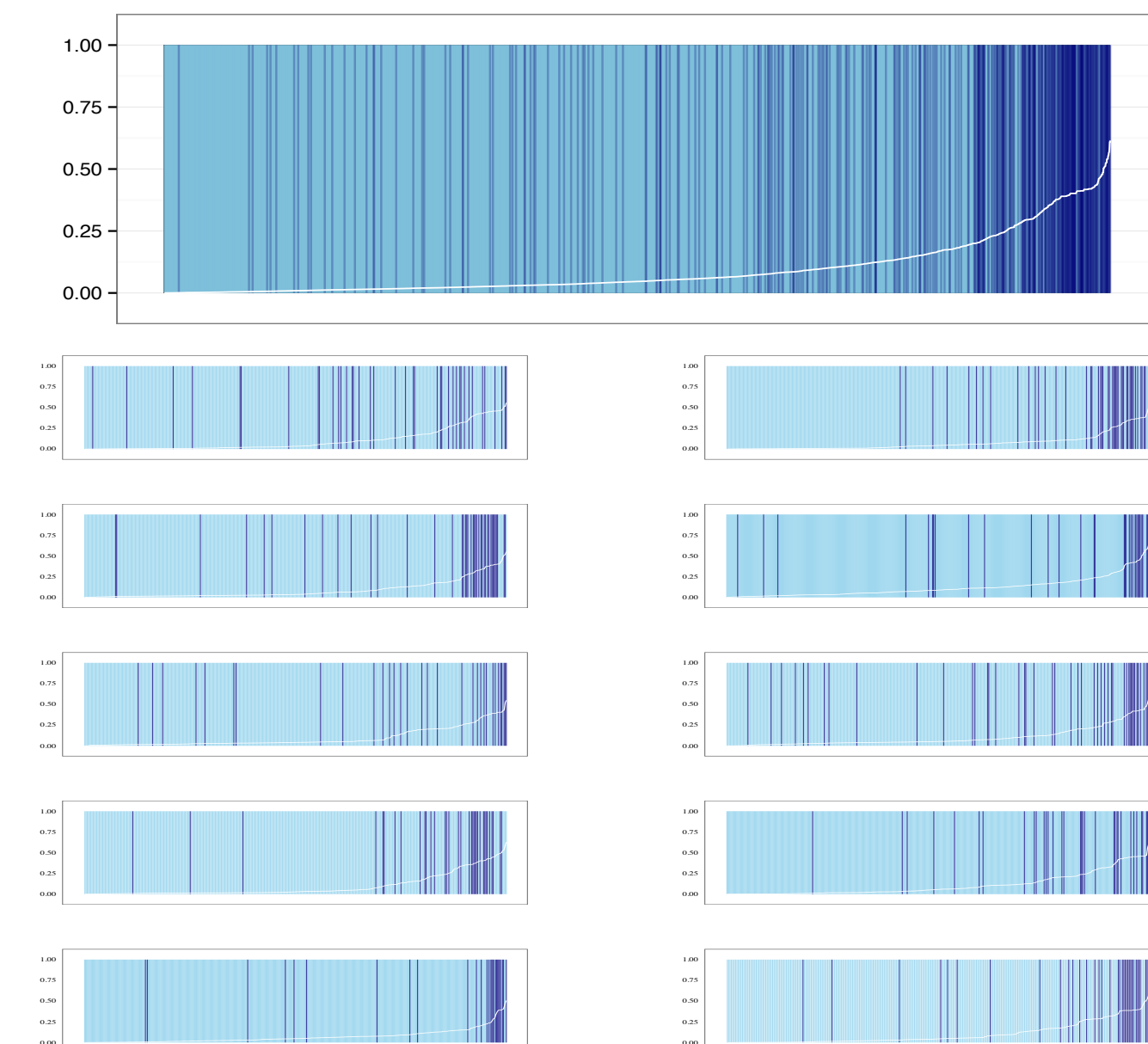

Extension: Extracting and Leveraging Network Information

The graphs below replicate and extend the network graph that Phillips used to generate his *allies* and *allies connections* variables. I extended the network analysis to highlight densely connected sub-graphs and to include both alliances and rivalries. Graph communities were identified via a 5-step random walk procedure.
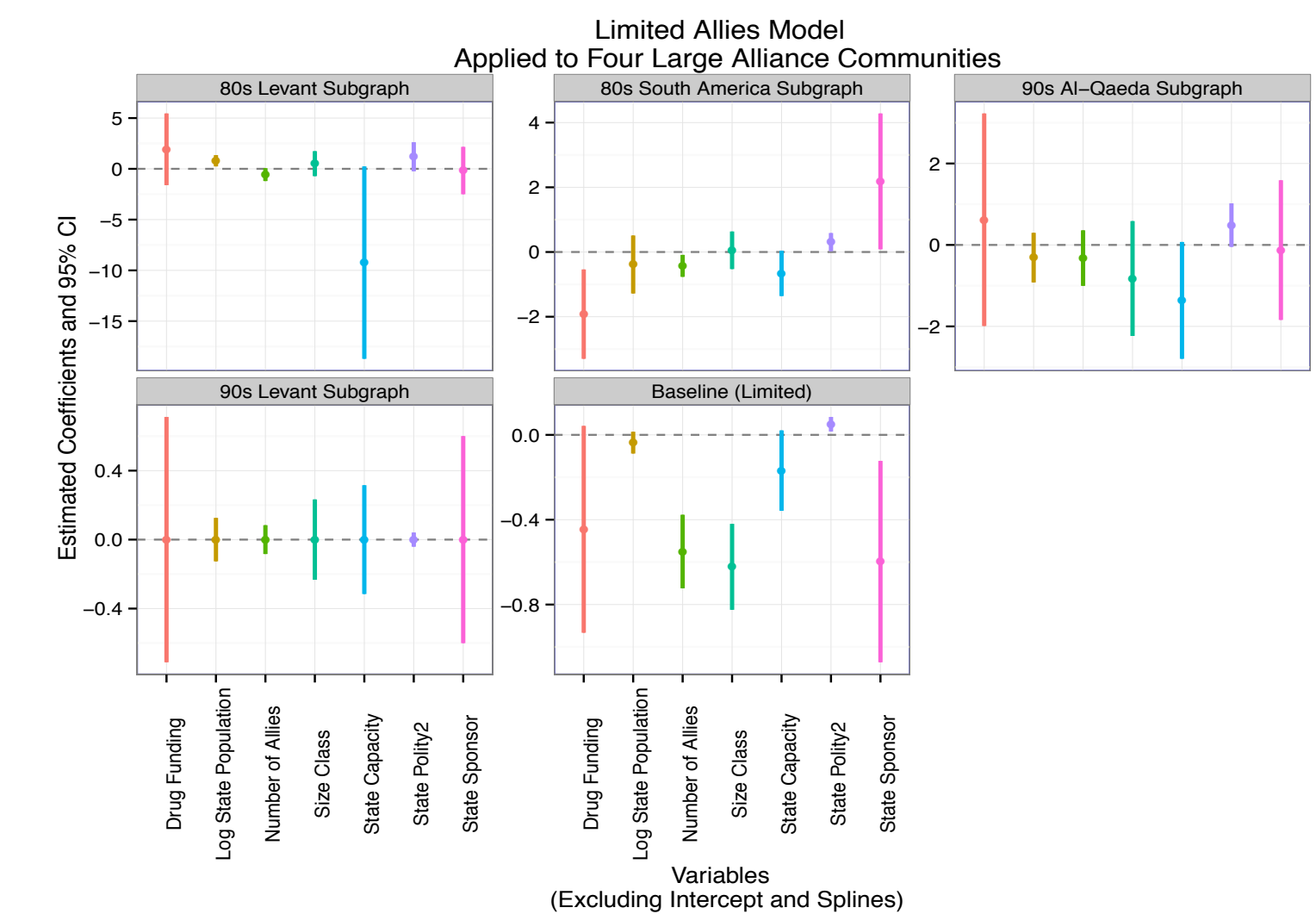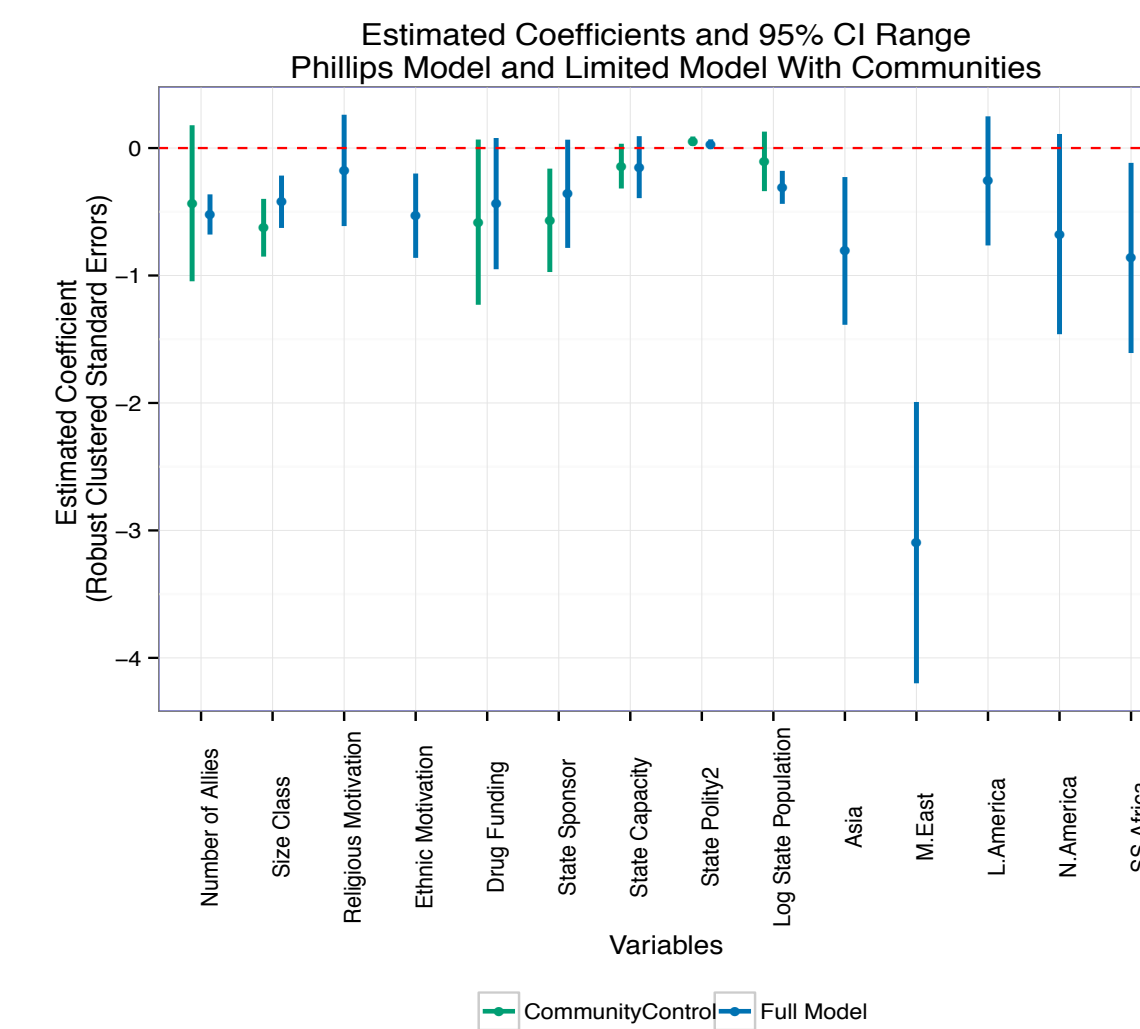
Late 1980s Terror Group Alliance and Rivalry Network   **Late 1990s–2000s Terror Group Alliance and Rivalry Network**
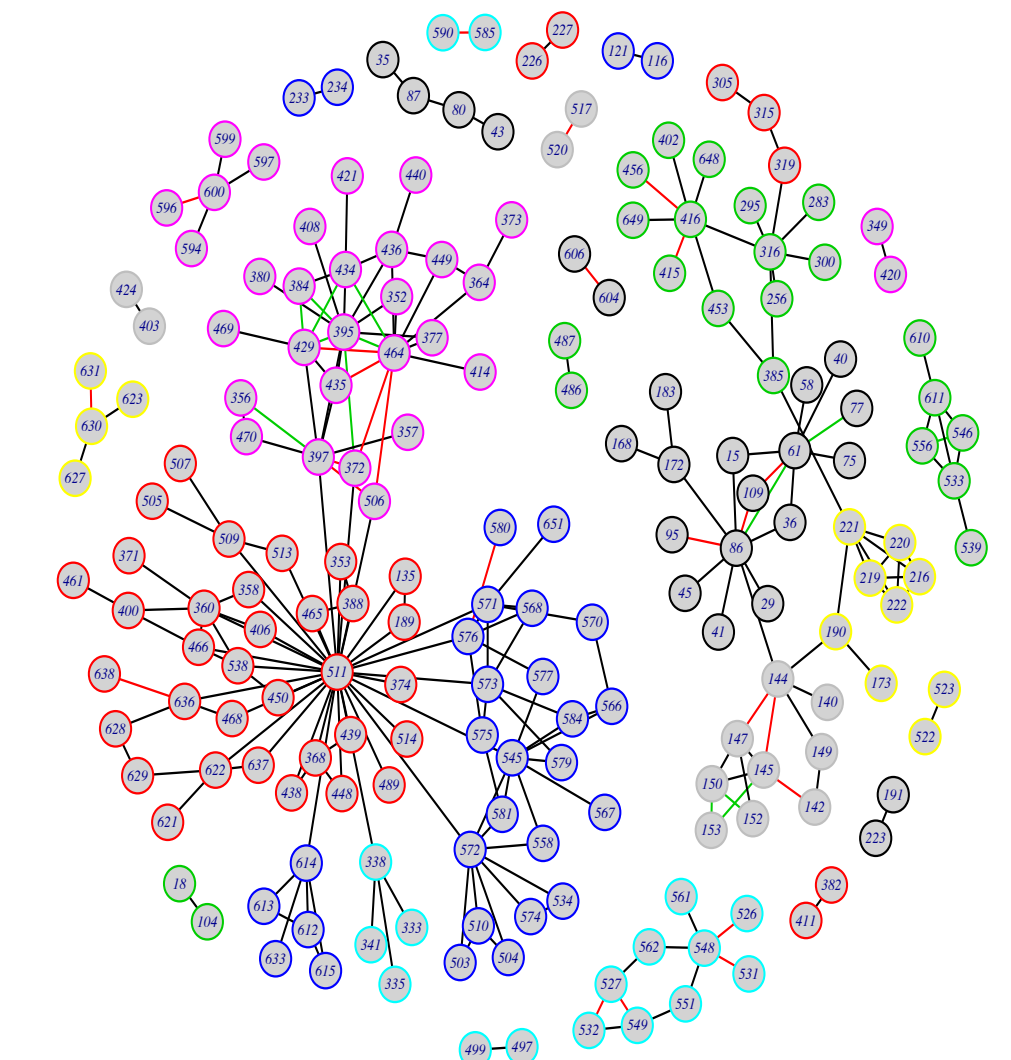
Black edges show alliances, red edges show rivalries, and green edges indicate that a dyad had experienced both alliances and rivalries. Communities are indicated by the outline color of contiguous nodes.

Extension: Quality or Quantity?

The table on the left presents the results of estimating the modified allies model with four large sub-communities included as binary control variables. The right applies the modified model to four of the largest sub-communities to investigate whether the estimates change. Within these communities, the estimated coefficient for number of allies ceases to be statistically significant.

Estimated Coefficients and 95% CI Range Phillips Model and Limited Model With Communities

Limited Allies Model Applied to Four Large Alliance Communities

Conclusions

- Controlling for large communities removes statistical significance of number of allies variable

- When estimated on large alliance networks, the duration-influencing variables of the restricted model trend generally with the full data. However, the substantive impact varies.

Future Avenues

- Address missing Polity2 data for Afghanistan, Cambodia, Iraq, Lebanon, and Surname.

- Expand model using a multi-level approach to allow for possible community-specific effects.

- Explore extension robustness and predictive power of community extension.