**Appendix 1.** Network data and additional analyses

Table A1.1 Network questions.

| Network question | Year asked |
|---|---|
| If you need extra help farming, who do you ask? | 2014, 2015 |
| Who do you usually socialize with? | 2014, 2015 |
| If you wanted information about forest or mushroom production, who do you ask? | 2014, 2015 |
| With whom do you discuss important matters? (anything that is important to you) | 2014, 2015 |
| When you have needed to borrow a little money, whom have you borrowed from?<br><br>Who have you lent a little money to before? | 2015 |
| When you have needed someone to help watch your kids, who have you asked?<br><br>Whose kids have you watched before? | 2015 |
| When you have been looking for a wage labor job, whom have you asked? | 2015 |
| When you have needed someone to help watch your pigs, whom have you asked?<br><br>Whose pigs have you helped watch before? | 2015 |
| When you have needed to borrow a car, who have you borrowed from?<br><br>Who have you lent a car to before? | 2015 |
| When you need help carrying crops to market, who helps?<br><br>Who have you helped bring crops to market? | 2015 |

Table A1.2 Network layers

| Layer | Data source | Description |
|---|---|---|
| Kinship | Interviews | Kinship ties between households based on coefficients of relatedness ($r$). |
| Lineage | Interviews | Patrilineal descent-based affiliations between households. |
| Aggregate social support | Interviews | Interactions between households. Includes all questions in Appendix Table A1.1. |
| Labor | Interviews | Interactions between households. Farmwork question in Appendix Table A1.1. |
| Socialization | Interviews | Interactions between households. Socialization question in Appendix Table A1.1. |
| Information | Interviews | Interactions between households. Important matters and information questions in Appendix Table A1.1. |
| Harvesting | Community documents | Mushroom harvesting partnerships between households. |
| Neighbors | Spatial data | Distance between household residences. Households are considered “neighbors” if they live within 250 meters. |

Figure A1.1 Additional results of cross-validation analysis of communities detected using *multitensor*, for different combinations of network layers, and different numbers of latent communities, in 2014 and 2015. AUC = Area-Under-the-Curve. The black dotted line at AUC=0.5 represents random performance in tie prediction. Row (a) show results for 2-fold cross-validation for aggregate social support, demonstrating that, with less information about the social support layer provided, the communities detected on the basis of the neighbors network (dist) provide the best predictions for social support. Row (b) shows 2-fold cross-validation analysis using only labor ties as the training layer; overall the results are similar to aggregate social support, although the relationship between the types of social support is com. This is likely related to the relative sparsity of these layers.

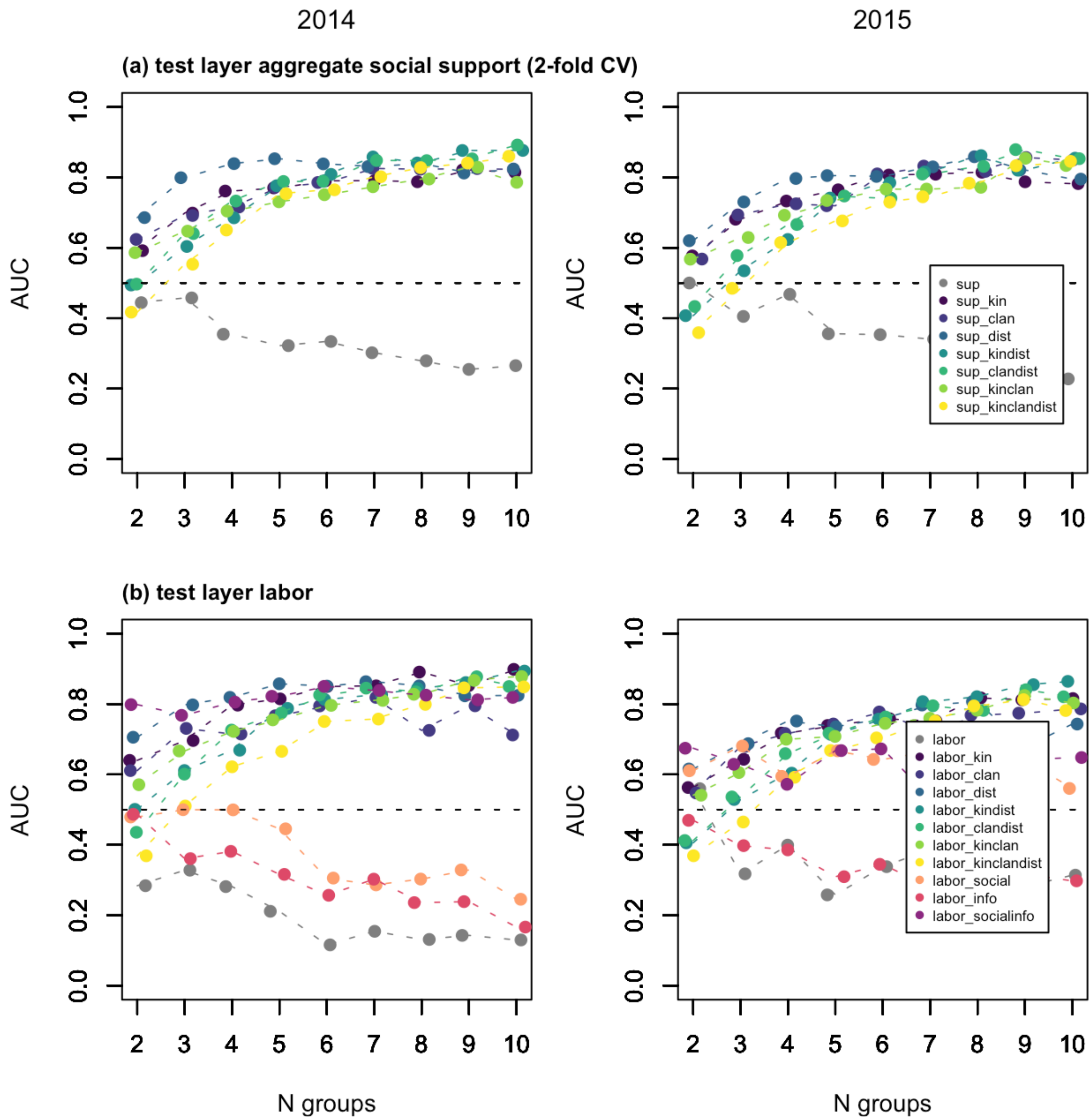

Figure A1.2 Additional model performance metrics for *multitensor* models including the social support (labor, socialization, and information) and harvest layers, with five latent communities. Recall, or “true positive rate,” is the proportion of all true cases that were correctly predicted by the model. The false positive rate is the proportion of true negatives that were predicted to be positive. Precision is the fraction of true positives out of the total of true and false positives. Since *multitensor* returns expected mean scores for the existence of a tie between two nodes, link prediction with binary data requires selecting an arbitrary threshold for the existence of a tie based on the model scores. Because AUC evaluates performance directly based on model scores, it avoids the problem of choosing an arbitrary threshold, and is consequently our preferred performance metric in this case. Here, to provide additional information about model performance, we show model recall, false positive rate, and precision for link prediction in the harvesting layer for a range of model score thresholds. Overall, thresholds in the range of 0.05 to 0.1 produce recall over 80% and false positive rates below 10%. Lower thresholds can capture nearly 100% of true positives, but have a higher rate of false positives. However model precision tradeoffs steeply with model recall. This reflects a classic problem in predicting rare events: at low model score thresholds, the models detected based on these layers are very good at recovering the “true” co-harvesting ties, but the model also predicts ties between many households who did not actually harvest together. In our case, we think that our inferences about the interdependence of social support and co-harvesting are not undermined by low model precision (i.e., we think AUC and recall are more important metrics given our inferential goals). Better understanding why some sets of people who have a high predicted likelihood of harvesting together (because they are neighbors or have social support ties) do or do not choose to harvest together in a given year is an interesting topic for future investigation.

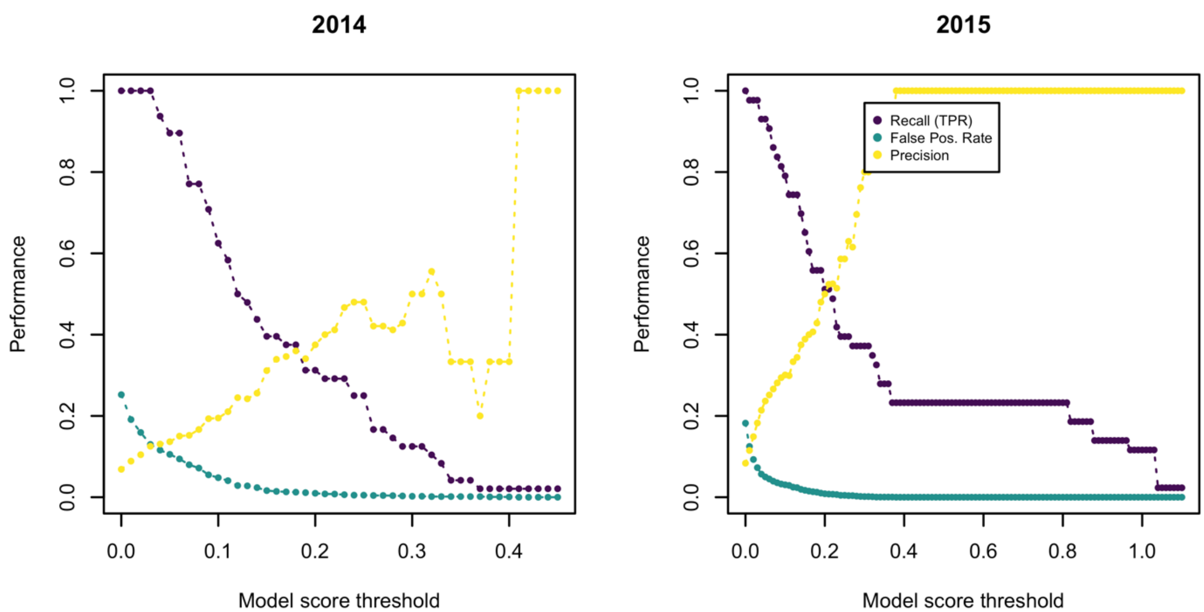

Figure A1.3 Layer affinity scores from *multitensor.* Affinities of latent communities to input network layers in the community detection analysis, for the communities shown in Figure 6. Low values (darker shades) indicate low affinity to a community; high values (brighter shades) indicate stronger affinity of a layer to a community.