

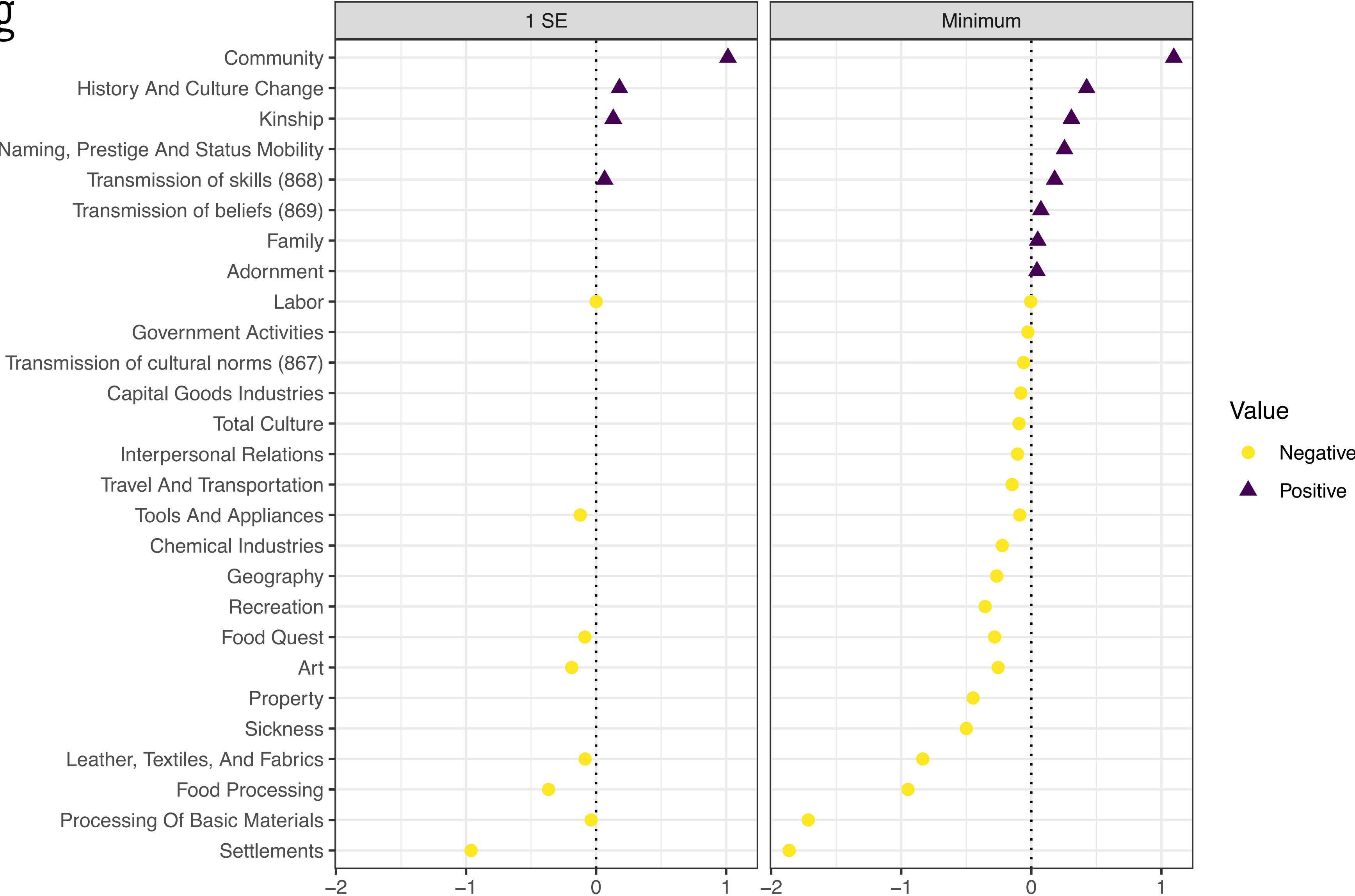
Predictors of evidence for teaching

Counts of evidence for teaching

Using subject codes to predict counts of evidence for teaching at the paragraph level [0..7]

43 unique subject code predictors

Poisson distributed elastic net lasso regression, λ minimum & λ 1SE via 20-fold CV



Predictors of evidence for teaching

Teaching vs. other processes

Using other coded variables to predict teaching vs. non-teaching social learning at the instance level

Multi-level logistic regression, index variable approach

Random effects for paragraph, document

<i>j</i>	<i>k</i>
Cultural values –	Domain
Religious –	
Ecology –	
Misc. skills –	
Manufacturing –	
Subsistence –	
Female –	Gender
Male –	
Neutral –	
Middle childhood –	Age
Adolescence –	
General –	
Childhood –	
Infancy –	
Early childhood –	
Oblique –	Mode
Vertical –	
Unknown –	
Horizontal –	

Model

$$E(\text{logit}[P(y_i = 1)]) = \alpha_{j[i]} + \epsilon_i, \text{ for } i = 1, \dots, n,$$

Where $y_i = 1$ is evidence for teaching in a given instance i and $\alpha_j = \alpha + \sum_1^k r_{k,j} \sim N(\alpha, \sigma_{\alpha_j}^2)$ is an “adjusted” mean for group j of categorical predictor k . Here, $r_{k,j}$ is a group-level effect of the k predictor.

The random effect for each index variable k is, $\alpha_j = \alpha + r_j \sim N(\alpha, \sigma_{\alpha_j}^2)$ is interpreted as an “adjusted” mean for group j . Here, r_j is an group-level effect.

Priors

$$\begin{aligned} \alpha &\sim Student - T(3, 0, 2.5) \\ sd_k &\sim Student - T(3, 0, 2.5) \\ z_k &\sim Normal(0, 1) \end{aligned}$$

This model involves the use of non-centered parameterization for group-level coefficients, i.e., it defines the independent standard normal coefficient z_k as parameters and then scales them according to the standard deviations sd_k .