Supplementary Materials for Openness and Computational Reproducibility in Plant Pathology: Where do we Stand and a Way Forward

# Supplementary Materials

## Journal Publication Model Reports

### Computational Methods

![](data:None;base64,)

We fitted a Bayesian logistic mixed model (estimated using MCMC sampling with 4 chains of 10000 iterations and a warmup of 5000) to predict comp\_mthds\_avail with abbreviation (formula: comp\_mthds\_avail ~ abbreviation). The model included assignee as random effect (formula: ~1 | assignee). Priors over parameters were set as normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00) and student\_t (location = 0.00, scale = 2.50) distributions. The model’s explanatory power is weak (R2 = 0.03, 95% CI [5.52e-04, 0.09]) and the part related to the fixed effects alone (marginal R2) is of 0.44 (95% CI [0.35, 0.47]). Within this model:

* The effect of b Intercept[1] (Median = 0.19, 95% CI [-1.32, 1.74]) has a 59.38% probability of being positive (> 0), 56.90% of being significant (> 0.05), and 44.21% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 36026)
* The effect of b Intercept[2] (Median = 0.57, 95% CI [-0.91, 2.11]) has a 76.98% probability of being positive (> 0), 75.00% of being significant (> 0.05), and 63.63% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 37983)
* The effect of b abbreviationAustralasPlantPath (Median = -0.12, 95% CI [-1.99, 1.67]) has a 55.22% probability of being negative (< 0), 53.21% of being significant (< -0.05), and 42.38% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 38554)
* The effect of b abbreviationCanJPlantPathol (Median = -0.18, 95% CI [-2.03, 1.53]) has a 57.79% probability of being negative (< 0), 55.68% of being significant (< -0.05), and 45.07% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 41384)
* The effect of b abbreviationCropProt (Median = -0.22, 95% CI [-2.09, 1.47]) has a 59.64% probability of being negative (< 0), 57.47% of being significant (< -0.05), and 46.49% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 36796)
* The effect of b abbreviationEurJPlantPathol (Median = -0.17, 95% CI [-2.04, 1.57]) has a 57.58% probability of being negative (< 0), 55.38% of being significant (< -0.05), and 44.64% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 37914)
* The effect of b abbreviationForestPathol (Median = -0.20, 95% CI [-2.02, 1.53]) has a 58.30% probability of being negative (< 0), 56.37% of being significant (< -0.05), and 45.28% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 38916)
* The effect of b abbreviationJGenPlantPathol (Median = -0.20, 95% CI [-2.06, 1.50]) has a 58.92% probability of being negative (< 0), 56.72% of being significant (< -0.05), and 45.63% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 35624)
* The effect of b abbreviationJPhytopathol (Median = -0.19, 95% CI [-2.06, 1.58]) has a 58.53% probability of being negative (< 0), 56.29% of being significant (< -0.05), and 45.41% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 37428)
* The effect of b abbreviationJPlantPathol (Median = -0.20, 95% CI [-2.02, 1.50]) has a 58.47% probability of being negative (< 0), 56.44% of being significant (< -0.05), and 45.21% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 38198)
* The effect of b abbreviationMolPlantMicroIn (Median = 0.50, 95% CI [-1.23, 2.07]) has a 71.84% probability of being positive (> 0), 69.88% of being significant (> 0.05), and 59.51% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 37272)
* The effect of b abbreviationMolPlantPathol (Median = -0.25, 95% CI [-2.08, 1.38]) has a 61.11% probability of being negative (< 0), 58.95% of being significant (< -0.05), and 47.64% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 38035)
* The effect of b abbreviationNematology (Median = -0.20, 95% CI [-2.02, 1.49]) has a 58.45% probability of being negative (< 0), 56.34% of being significant (< -0.05), and 45.52% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 34704)
* The effect of b abbreviationPhysiolMolPlantP (Median = -0.22, 95% CI [-2.05, 1.44]) has a 59.49% probability of being negative (< 0), 57.43% of being significant (< -0.05), and 46.38% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 36784)
* The effect of b abbreviationPhytoparasitica (Median = -0.22, 95% CI [-2.05, 1.43]) has a 60.19% probability of being negative (< 0), 57.77% of being significant (< -0.05), and 46.61% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 42138)
* The effect of b abbreviationPhytopatholMediterr (Median = -0.18, 95% CI [-2.03, 1.57]) has a 57.54% probability of being negative (< 0), 55.52% of being significant (< -0.05), and 44.89% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 33679)
* The effect of b abbreviationPlantDis (Median = -0.16, 95% CI [-2.04, 1.54]) has a 57.30% probability of being negative (< 0), 55.13% of being significant (< -0.05), and 44.37% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 37376)
* The effect of b abbreviationPlantHealthProgress (Median = -0.15, 95% CI [-2.02, 1.58]) has a 56.49% probability of being negative (< 0), 54.36% of being significant (< -0.05), and 43.64% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 35846)
* The effect of b abbreviationPlantPathol (Median = -0.23, 95% CI [-2.05, 1.42]) has a 60.34% probability of being negative (< 0), 58.16% of being significant (< -0.05), and 47.05% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 35972)
* The effect of b abbreviationRevMexFitopatol (Median = -0.23, 95% CI [-2.04, 1.44]) has a 60.05% probability of being negative (< 0), 57.82% of being significant (< -0.05), and 46.74% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 38296)
* The effect of b abbreviationTropPlantPathol (Median = 0.67, 95% CI [-1.14, 2.30]) has a 77.89% probability of being positive (> 0), 76.18% of being significant (> 0.05), and 66.20% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 25359)
* The effect of b abbreviationVirolJ (Median = -0.14, 95% CI [-2.02, 1.61]) has a 55.94% probability of being negative (< 0), 53.73% of being significant (< -0.05), and 43.02% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 27472)

Following the Sequential Effect eXistence and sIgnificance Testing (SEXIT) framework, we report the median of the posterior distribution and its 95% CI (Highest Density Interval), along the probability of direction (pd), the probability of significance and the probability of being large. The thresholds beyond which the effect is considered as significant (i.e., non-negligible) and large are |0.05| and |0.30|. Convergence and stability of the Bayesian sampling has been assessed using R-hat, which should be below 1.01 (Vehtari et al., 2019), and Effective Sample Size (ESS), which should be greater than 1000 (Burkner, 2017).

### Data

![](data:None;base64,)

We fitted a Bayesian logistic mixed model (estimated using MCMC sampling with 4 chains of 10000 iterations and a warmup of 5000) to predict data\_avail with abbreviation (formula: data\_avail ~ abbreviation). The model included assignee as random effect (formula: ~1 | assignee). Priors over parameters were set as normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00) and student\_t (location = 0.00, scale = 2.50) distributions. The model’s explanatory power is weak (R2 = 0.10, 95% CI [0.06, 0.15]) and the part related to the fixed effects alone (marginal R2) is of 0.19 (95% CI [0.07, 0.27]). Within this model:

* The effect of b Intercept[1] (Median = 0.37, 95% CI [-0.99, 1.67]) has a 69.72% probability of being positive (> 0), 67.09% of being significant (> 0.05), and 54.17% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 31873)
* The effect of b Intercept[2] (Median = 0.71, 95% CI [-0.66, 2.00]) has a 84.13% probability of being positive (> 0), 82.17% of being significant (> 0.05), and 71.46% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 27436)
* The effect of b Intercept[3] (Median = 1.22, 95% CI [-0.15, 2.52]) has a 95.89% probability of being positive (> 0), 95.30% of being significant (> 0.05), and 90.28% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 31641)
* The effect of b abbreviationAustralasPlantPath (Median = 0.57, 95% CI [-0.73, 1.76]) has a 81.00% probability of being positive (> 0), 78.71% of being significant (> 0.05), and 66.05% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 29564)
* The effect of b abbreviationCanJPlantPathol (Median = 0.25, 95% CI [-0.87, 1.27]) has a 67.31% probability of being positive (> 0), 63.75% of being significant (> 0.05), and 46.06% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 30081)
* The effect of b abbreviationCropProt (Median = -1.26, 95% CI [-2.74, -0.02]) has a 97.72% probability of being negative (< 0), 97.23% of being significant (< -0.05), and 93.23% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 30193)
* The effect of b abbreviationEurJPlantPathol (Median = 0.04, 95% CI [-1.15, 1.11]) has a 52.79% probability of being positive (> 0), 49.55% of being significant (> 0.05), and 32.88% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 29513)
* The effect of b abbreviationForestPathol (Median = -0.11, 95% CI [-1.27, 0.94]) has a 57.46% probability of being negative (< 0), 53.86% of being significant (< -0.05), and 36.75% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 27619)
* The effect of b abbreviationJGenPlantPathol (Median = 0.08, 95% CI [-1.03, 1.08]) has a 55.70% probability of being positive (> 0), 51.99% of being significant (> 0.05), and 33.27% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 25378)
* The effect of b abbreviationJPhytopathol (Median = -0.78, 95% CI [-2.13, 0.37]) has a 90.40% probability of being negative (< 0), 88.88% of being significant (< -0.05), and 78.19% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 22970)
* The effect of b abbreviationJPlantPathol (Median = 0.15, 95% CI [-0.96, 1.15]) has a 61.59% probability of being positive (> 0), 58.03% of being significant (> 0.05), and 38.56% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 30495)
* The effect of b abbreviationMolPlantMicroIn (Median = 0.67, 95% CI [-0.28, 1.57]) has a 92.15% probability of being positive (> 0), 90.61% of being significant (> 0.05), and 78.94% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 25478)
* The effect of b abbreviationMolPlantPathol (Median = 0.97, 95% CI [0.18, 1.73]) has a 99.12% probability of being positive (> 0), 98.85% of being significant (> 0.05), and 95.14% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 29338)
* The effect of b abbreviationNematology (Median = -0.21, 95% CI [-1.50, 0.94]) has a 63.68% probability of being negative (< 0), 60.52% of being significant (< -0.05), and 44.20% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 26734)
* The effect of b abbreviationPhysiolMolPlantP (Median = 0.55, 95% CI [-0.39, 1.42]) has a 87.99% probability of being positive (> 0), 85.76% of being significant (> 0.05), and 70.61% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 30679)
* The effect of b abbreviationPhytoparasitica (Median = -0.22, 95% CI [-1.34, 0.79]) has a 65.67% probability of being negative (< 0), 62.17% of being significant (< -0.05), and 43.64% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 31159)
* The effect of b abbreviationPhytopatholMediterr (Median = 1.25, 95% CI [0.32, 2.15]) has a 99.58% probability of being positive (> 0), 99.42% of being significant (> 0.05), and 97.73% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 24986)
* The effect of b abbreviationPlantDis (Median = -1.27, 95% CI [-2.75, -0.04]) has a 97.91% probability of being negative (< 0), 97.34% of being significant (< -0.05), and 93.47% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 29484)
* The effect of b abbreviationPlantHealthProgress (Median = -0.63, 95% CI [-2.06, 0.57]) has a 83.91% probability of being negative (< 0), 81.85% of being significant (< -0.05), and 69.47% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 28406)
* The effect of b abbreviationPlantPathol (Median = -0.08, 95% CI [-1.08, 0.84]) has a 57.05% probability of being negative (< 0), 52.89% of being significant (< -0.05), and 32.87% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 24481)
* The effect of b abbreviationRevMexFitopatol (Median = -1.17, 95% CI [-2.65, 0.11]) has a 96.32% probability of being negative (< 0), 95.60% of being significant (< -0.05), and 90.46% of being large (< -0.30). The estimation successfully converged (Rhat = 1.001) and the indices are reliable (ESS = 5314)
* The effect of b abbreviationTropPlantPathol (Median = 0.33, 95% CI [-0.80, 1.36]) has a 72.28% probability of being positive (> 0), 69.30% of being significant (> 0.05), and 52.28% of being large (> 0.30). The estimation successfully converged (Rhat = 1.001) and the indices are reliable (ESS = 5352)
* The effect of b abbreviationVirolJ (Median = 0.84, 95% CI [-0.06, 1.71]) has a 96.73% probability of being positive (> 0), 95.88% of being significant (> 0.05), and 88.80% of being large (> 0.30). The estimation successfully converged (Rhat = 1.001) and the indices are reliable (ESS = 5473)

Following the Sequential Effect eXistence and sIgnificance Testing (SEXIT) framework, we report the median of the posterior distribution and its 95% CI (Highest Density Interval), along the probability of direction (pd), the probability of significance and the probability of being large. The thresholds beyond which the effect is considered as significant (i.e., non-negligible) and large are |0.05| and |0.30|. Convergence and stability of the Bayesian sampling has been assessed using R-hat, which should be below 1.01 (Vehtari et al., 2019), and Effective Sample Size (ESS), which should be greater than 1000 (Burkner, 2017).

## Year

### Computational Methods

![](data:None;base64,)

We fitted a Bayesian logistic mixed model (estimated using MCMC sampling with 4 chains of 10000 iterations and a warmup of 5000) to predict comp\_mthds\_avail with year (formula: comp\_mthds\_avail ~ year). The model included abbreviation and assignee as random effects (formula: list(~1 | abbreviation, ~1 | assignee)). Priors over parameters were set as normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), student\_t (location = 0.00, scale = 2.50) and student\_t (location = 0.00, scale = 2.50) distributions. The model’s explanatory power is weak (R2 = 0.07, 95% CI [1.79e-03, 0.25]) and the part related to the fixed effects alone (marginal R2) is of 0.44 (95% CI [0.32, 0.49]). Within this model:

* The effect of b Intercept[1] (Median = 0.29, 95% CI [-1.31, 1.91]) has a 63.92% probability of being positive (> 0), 61.65% of being significant (> 0.05), and 49.63% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 24527)
* The effect of b Intercept[2] (Median = 0.70, 95% CI [-0.89, 2.30]) has a 80.45% probability of being positive (> 0), 78.60% of being significant (> 0.05), and 68.64% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 27225)
* The effect of b year2013 (Median = -0.26, 95% CI [-2.11, 1.43]) has a 61.91% probability of being negative (< 0), 59.75% of being significant (< -0.05), and 48.30% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 32516)
* The effect of b year2014 (Median = -0.27, 95% CI [-2.06, 1.40]) has a 62.08% probability of being negative (< 0), 59.91% of being significant (< -0.05), and 48.52% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 29226)
* The effect of b year2015 (Median = 0.39, 95% CI [-1.30, 1.99]) has a 67.56% probability of being positive (> 0), 65.52% of being significant (> 0.05), and 54.24% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 33527)
* The effect of b year2016 (Median = 0.46, 95% CI [-1.25, 2.05]) has a 70.79% probability of being positive (> 0), 68.79% of being significant (> 0.05), and 57.91% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 31170)
* The effect of b year2017 (Median = -0.30, 95% CI [-2.10, 1.41]) has a 63.30% probability of being negative (< 0), 61.25% of being significant (< -0.05), and 49.98% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 29319)
* The effect of b year2018 (Median = -0.27, 95% CI [-2.08, 1.43]) has a 62.56% probability of being negative (< 0), 60.36% of being significant (< -0.05), and 48.92% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 29254)
* The effect of b year2019 (Median = 0.81, 95% CI [-0.74, 2.25]) has a 84.79% probability of being positive (> 0), 83.30% of being significant (> 0.05), and 74.25% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 29977)
* The effect of b year2020 (Median = -0.29, 95% CI [-2.09, 1.33]) has a 63.16% probability of being negative (< 0), 60.97% of being significant (< -0.05), and 49.78% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 29490)
* The effect of b year2021 (Median = 0.37, 95% CI [-1.32, 1.96]) has a 66.64% probability of being positive (> 0), 64.64% of being significant (> 0.05), and 53.24% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 28457)

Following the Sequential Effect eXistence and sIgnificance Testing (SEXIT) framework, we report the median of the posterior distribution and its 95% CI (Highest Density Interval), along the probability of direction (pd), the probability of significance and the probability of being large. The thresholds beyond which the effect is considered as significant (i.e., non-negligible) and large are |0.05| and |0.30|. Convergence and stability of the Bayesian sampling has been assessed using R-hat, which should be below 1.01 (Vehtari et al., 2019), and Effective Sample Size (ESS), which should be greater than 1000 (Burkner, 2017).

### Data

![](data:None;base64,)

We fitted a Bayesian logistic mixed model (estimated using MCMC sampling with 4 chains of 10000 iterations and a warmup of 5000) to predict data\_avail with year (formula: data\_avail ~ year). The model included abbreviation and assignee as random effects (formula: list(~1 | abbreviation, ~1 | assignee)). Priors over parameters were set as normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), student\_t (location = 0.00, scale = 2.50) and student\_t (location = 0.00, scale = 2.50) distributions. The model’s explanatory power is weak (R2 = 0.12, 95% CI [0.06, 0.18]) and the part related to the fixed effects alone (marginal R2) is of 0.08 (95% CI [0.02, 0.15]). Within this model:

* The effect of b Intercept[1] (Median = 0.46, 95% CI [-0.90, 1.75]) has a 74.46% probability of being positive (> 0), 72.19% of being significant (> 0.05), and 59.26% of being large (> 0.30). The estimation successfully converged (Rhat = 1.001) and the indices are reliable (ESS = 6081)
* The effect of b Intercept[2] (Median = 0.80, 95% CI [-0.55, 2.08]) has a 87.48% probability of being positive (> 0), 86.00% of being significant (> 0.05), and 76.37% of being large (> 0.30). The estimation successfully converged (Rhat = 1.001) and the indices are reliable (ESS = 6176)
* The effect of b Intercept[3] (Median = 1.33, 95% CI [-0.03, 2.60]) has a 97.23% probability of being positive (> 0), 96.73% of being significant (> 0.05), and 92.98% of being large (> 0.30). The estimation successfully converged (Rhat = 1.001) and the indices are reliable (ESS = 6336)
* The effect of b year2013 (Median = -0.23, 95% CI [-1.20, 0.67]) has a 69.27% probability of being negative (< 0), 65.40% of being significant (< -0.05), and 44.09% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 21139)
* The effect of b year2014 (Median = -0.13, 95% CI [-1.11, 0.76]) has a 61.52% probability of being negative (< 0), 57.17% of being significant (< -0.05), and 35.77% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 21628)
* The effect of b year2015 (Median = 0.36, 95% CI [-0.66, 1.29]) has a 76.50% probability of being positive (> 0), 73.37% of being significant (> 0.05), and 54.99% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 22319)
* The effect of b year2016 (Median = 0.97, 95% CI [0.16, 1.75]) has a 98.95% probability of being positive (> 0), 98.66% of being significant (> 0.05), and 94.66% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 18343)
* The effect of b year2017 (Median = -0.19, 95% CI [-1.15, 0.70]) has a 65.59% probability of being negative (< 0), 61.48% of being significant (< -0.05), and 40.88% of being large (< -0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 19177)
* The effect of b year2018 (Median = 0.15, 95% CI [-0.79, 1.07]) has a 62.46% probability of being positive (> 0), 58.45% of being significant (> 0.05), and 37.63% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 18328)
* The effect of b year2019 (Median = 0.24, 95% CI [-0.65, 1.08]) has a 70.16% probability of being positive (> 0), 66.23% of being significant (> 0.05), and 43.80% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 19464)
* The effect of b year2020 (Median = 0.15, 95% CI [-0.73, 0.98]) has a 62.70% probability of being positive (> 0), 58.45% of being significant (> 0.05), and 35.88% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 18569)
* The effect of b year2021 (Median = 0.58, 95% CI [-0.23, 1.37]) has a 91.75% probability of being positive (> 0), 89.89% of being significant (> 0.05), and 75.30% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 17116)

Following the Sequential Effect eXistence and sIgnificance Testing (SEXIT) framework, we report the median of the posterior distribution and its 95% CI (Highest Density Interval), along the probability of direction (pd), the probability of significance and the probability of being large. The thresholds beyond which the effect is considered as significant (i.e., non-negligible) and large are |0.05| and |0.30|. Convergence and stability of the Bayesian sampling has been assessed using R-hat, which should be below 1.01 (Vehtari et al., 2019), and Effective Sample Size (ESS), which should be greater than 1000 (Burkner, 2017).

## Five-year Impact Factor

### Computational Methods

![](data:None;base64,)

We fitted a Bayesian logistic mixed model (estimated using MCMC sampling with 4 chains of 10000 iterations and a warmup of 5000) to predict comp\_mthds\_avail with IF\_5year (formula: comp\_mthds\_avail ~ IF\_5year). The model included assignee as random effect (formula: ~1 | assignee). Priors over parameters were set as normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00) and student\_t (location = 0.00, scale = 2.50) distributions. The model’s explanatory power is weak (R2 = 0.02, 95% CI [1.82e-04, 0.11]) and the part related to the fixed effects alone (marginal R2) is of 0.42 (95% CI [0.04, 0.49]). Within this model:

* The effect of b Intercept[1] (Median = 1.54, 95% CI [-0.44, 3.57]) has a 93.50% probability of being positive (> 0), 92.92% of being significant (> 0.05), and 88.85% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 15311)
* The effect of b Intercept[2] (Median = 1.93, 95% CI [-0.04, 3.96]) has a 97.28% probability of being positive (> 0), 96.84% of being significant (> 0.05), and 94.62% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 14400)
* The effect of b IF 5year (Median = 0.46, 95% CI [-0.05, 1.03]) has a 95.97% probability of being positive (> 0), 94.01% of being significant (> 0.05), and 72.34% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 15684)

Following the Sequential Effect eXistence and sIgnificance Testing (SEXIT) framework, we report the median of the posterior distribution and its 95% CI (Highest Density Interval), along the probability of direction (pd), the probability of significance and the probability of being large. The thresholds beyond which the effect is considered as significant (i.e., non-negligible) and large are |0.05| and |0.30|. Convergence and stability of the Bayesian sampling has been assessed using R-hat, which should be below 1.01 (Vehtari et al., 2019), and Effective Sample Size (ESS), which should be greater than 1000 (Burkner, 2017).

### Data

![](data:None;base64,)

We fitted a Bayesian logistic mixed model (estimated using MCMC sampling with 4 chains of 10000 iterations and a warmup of 5000) to predict data\_avail with IF\_5year (formula: data\_avail ~ IF\_5year). The model included assignee as random effect (formula: ~1 | assignee). Priors over parameters were set as normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00), normal (mean = 0.00, SD = 1.00) and student\_t (location = 0.00, scale = 2.50) distributions. The model’s explanatory power is weak (R2 = 0.03, 95% CI [8.84e-03, 0.07]) and the part related to the fixed effects alone (marginal R2) is of 0.03 (95% CI [1.44e-09, 0.08]). Within this model:

* The effect of b Intercept[1] (Median = 0.94, 95% CI [-0.44, 2.12]) has a 90.11% probability of being positive (> 0), 88.79% of being significant (> 0.05), and 80.66% of being large (> 0.30). The estimation successfully converged (Rhat = 1.000) and the indices are reliable (ESS = 16986)
* The effect of b Intercept[2] (Median = 1.25, 95% CI [-0.11, 2.44]) has a 96.14% probability of being positive (> 0), 95.41% of being significant (> 0.05), and 90.48% of being large (> 0.30). The estimation successfully converged (Rhat = 1.002) and the indices are reliable (ESS = 3521)
* The effect of b Intercept[3] (Median = 1.74, 95% CI [0.38, 2.94]) has a 99.47% probability of being positive (> 0), 99.30% of being significant (> 0.05), and 98.14% of being large (> 0.30). The estimation successfully converged (Rhat = 1.002) and the indices are reliable (ESS = 3552)
* The effect of b IF 5year (Median = 0.19, 95% CI [0.04, 0.33]) has a 99.25% probability of being positive (> 0), 96.23% of being significant (> 0.05), and 6.53% of being large (> 0.30). The estimation successfully converged (Rhat = 1.002) and the indices are reliable (ESS = 3675)

Following the Sequential Effect eXistence and sIgnificance Testing (SEXIT) framework, we report the median of the posterior distribution and its 95% CI (Highest Density Interval), along the probability of direction (pd), the probability of significance and the probability of being large. The thresholds beyond which the effect is considered as significant (i.e., non-negligible) and large are |0.05| and |0.30|. Convergence and stability of the Bayesian sampling has been assessed using R-hat, which should be below 1.01 (Vehtari et al., 2019), and Effective Sample Size (ESS), which should be greater than 1000 (Burkner, 2017).

## Tables

**Table** :

| Parameter | Median | CI | CI Low | CI High | pd | ROPE % | Rhat | ESS | Fit |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| abbreviationAustralasPlantPath | -0.12 | 0.95 | -1.99 | 1.67 | 0.55 | 16% | 1.00 | 36,025.85 |  |
| abbreviationCanJPlantPathol | -0.18 | 0.95 | -2.03 | 1.53 | 0.58 | 16% | 1.00 | 37,983.39 |  |
| abbreviationCropProt | -0.22 | 0.95 | -2.09 | 1.47 | 0.60 | 16% | 1.00 | 38,553.81 |  |
| abbreviationEurJPlantPathol | -0.17 | 0.95 | -2.04 | 1.57 | 0.58 | 16% | 1.00 | 41,383.99 |  |
| abbreviationForestPathol | -0.20 | 0.95 | -2.02 | 1.53 | 0.58 | 16% | 1.00 | 36,796.45 |  |
| abbreviationJGenPlantPathol | -0.20 | 0.95 | -2.06 | 1.50 | 0.59 | 17% | 1.00 | 37,913.57 |  |
| abbreviationJPhytopathol | -0.19 | 0.95 | -2.06 | 1.58 | 0.59 | 17% | 1.00 | 38,916.18 |  |
| abbreviationJPlantPathol | -0.20 | 0.95 | -2.02 | 1.50 | 0.58 | 17% | 1.00 | 35,623.96 |  |
| abbreviationMolPlantMicroIn | 0.50 | 0.95 | -1.23 | 2.07 | 0.72 | 14% | 1.00 | 37,427.70 |  |
| abbreviationMolPlantPathol | -0.25 | 0.95 | -2.08 | 1.38 | 0.61 | 17% | 1.00 | 38,198.18 |  |
| abbreviationNematology | -0.20 | 0.95 | -2.02 | 1.49 | 0.58 | 16% | 1.00 | 37,272.03 |  |
| abbreviationPhysiolMolPlantP | -0.22 | 0.95 | -2.05 | 1.44 | 0.59 | 17% | 1.00 | 38,035.36 |  |
| abbreviationPhytoparasitica | -0.22 | 0.95 | -2.05 | 1.43 | 0.60 | 17% | 1.00 | 34,703.53 |  |
| abbreviationPhytopatholMediterr | -0.18 | 0.95 | -2.03 | 1.57 | 0.58 | 16% | 1.00 | 36,784.02 |  |
| abbreviationPlantDis | -0.16 | 0.95 | -2.04 | 1.54 | 0.57 | 16% | 1.00 | 42,138.27 |  |
| abbreviationPlantHealthProgress | -0.15 | 0.95 | -2.02 | 1.58 | 0.56 | 16% | 1.00 | 33,678.96 |  |
| abbreviationPlantPathol | -0.23 | 0.95 | -2.05 | 1.42 | 0.60 | 16% | 1.00 | 37,375.57 |  |
| abbreviationRevMexFitopatol | -0.23 | 0.95 | -2.04 | 1.44 | 0.60 | 17% | 1.00 | 35,845.51 |  |
| abbreviationTropPlantPathol | 0.67 | 0.95 | -1.14 | 2.30 | 0.78 | 13% | 1.00 | 35,972.47 |  |
| abbreviationVirolJ | -0.14 | 0.95 | -2.02 | 1.61 | 0.56 | 16% | 1.00 | 38,296.16 |  |
| ELPD |  |  |  |  |  |  |  |  | -33.90 |
| LOOIC |  |  |  |  |  |  |  |  | 67.80 |
| WAIC |  |  |  |  |  |  |  |  | 66.63 |
| Sigma |  |  |  |  |  |  |  |  | 1.00 |

**Table** :

| Parameter | Median | CI | CI Low | CI High | pd | ROPE % | Rhat | ESS | Fit |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| abbreviationAustralasPlantPath | 0.57 | 0.95 | -0.73 | 1.76 | 0.81 | 16% | 1.00 | 31,872.73 |  |
| abbreviationCanJPlantPathol | 0.25 | 0.95 | -0.87 | 1.27 | 0.67 | 25% | 1.00 | 27,436.43 |  |
| abbreviationCropProt | -1.26 | 0.95 | -2.74 | -0.02 | 0.98 | 2% | 1.00 | 31,640.89 |  |
| abbreviationEurJPlantPathol | 0.04 | 0.95 | -1.15 | 1.11 | 0.53 | 26% | 1.00 | 29,563.79 |  |
| abbreviationForestPathol | -0.11 | 0.95 | -1.27 | 0.94 | 0.57 | 26% | 1.00 | 30,080.82 |  |
| abbreviationJGenPlantPathol | 0.08 | 0.95 | -1.03 | 1.08 | 0.56 | 28% | 1.00 | 30,193.09 |  |
| abbreviationJPhytopathol | -0.78 | 0.95 | -2.13 | 0.37 | 0.90 | 12% | 1.00 | 29,513.00 |  |
| abbreviationJPlantPathol | 0.15 | 0.95 | -0.96 | 1.15 | 0.62 | 27% | 1.00 | 27,619.26 |  |
| abbreviationMolPlantMicroIn | 0.67 | 0.95 | -0.28 | 1.57 | 0.92 | 11% | 1.00 | 25,378.34 |  |
| abbreviationMolPlantPathol | 0.97 | 0.95 | 0.18 | 1.73 | 0.99 | 0% | 1.00 | 22,969.84 |  |
| abbreviationNematology | -0.21 | 0.95 | -1.50 | 0.94 | 0.64 | 24% | 1.00 | 30,495.20 |  |
| abbreviationPhysiolMolPlantP | 0.55 | 0.95 | -0.39 | 1.42 | 0.88 | 16% | 1.00 | 25,478.13 |  |
| abbreviationPhytoparasitica | -0.22 | 0.95 | -1.34 | 0.79 | 0.66 | 26% | 1.00 | 29,338.27 |  |
| abbreviationPhytopatholMediterr | 1.25 | 0.95 | 0.32 | 2.15 | 1.00 | 0% | 1.00 | 26,733.65 |  |
| abbreviationPlantDis | -1.27 | 0.95 | -2.75 | -0.04 | 0.98 | 2% | 1.00 | 30,678.73 |  |
| abbreviationPlantHealthProgress | -0.63 | 0.95 | -2.06 | 0.57 | 0.84 | 15% | 1.00 | 31,158.68 |  |
| abbreviationPlantPathol | -0.08 | 0.95 | -1.08 | 0.84 | 0.57 | 31% | 1.00 | 24,985.53 |  |
| abbreviationRevMexFitopatol | -1.17 | 0.95 | -2.65 | 0.11 | 0.96 | 5% | 1.00 | 29,483.85 |  |
| abbreviationTropPlantPathol | 0.33 | 0.95 | -0.80 | 1.36 | 0.72 | 22% | 1.00 | 28,405.58 |  |
| abbreviationVirolJ | 0.84 | 0.95 | -0.06 | 1.71 | 0.97 | 5% | 1.00 | 24,480.93 |  |
| ELPD |  |  |  |  |  |  |  |  | -299.17 |
| LOOIC |  |  |  |  |  |  |  |  | 598.33 |
| WAIC |  |  |  |  |  |  |  |  | 598.19 |
| Sigma |  |  |  |  |  |  |  |  | 1.00 |

**Table** :

| Parameter | Median | CI | CI Low | CI High | pd | ROPE % | Rhat | ESS | Fit |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| year2013 | -0.26 | 0.95 | -2.11 | 1.43 | 0.62 | 16% | 1.00 | 32,516.49 |  |
| year2014 | -0.27 | 0.95 | -2.06 | 1.40 | 0.62 | 16% | 1.00 | 29,225.82 |  |
| year2015 | 0.39 | 0.95 | -1.30 | 1.99 | 0.68 | 16% | 1.00 | 33,527.04 |  |
| year2016 | 0.46 | 0.95 | -1.25 | 2.05 | 0.71 | 15% | 1.00 | 31,169.80 |  |
| year2017 | -0.30 | 0.95 | -2.10 | 1.41 | 0.63 | 16% | 1.00 | 29,319.49 |  |
| year2018 | -0.27 | 0.95 | -2.08 | 1.43 | 0.63 | 17% | 1.00 | 29,253.93 |  |
| year2019 | 0.81 | 0.95 | -0.74 | 2.25 | 0.85 | 11% | 1.00 | 29,977.03 |  |
| year2020 | -0.29 | 0.95 | -2.09 | 1.33 | 0.63 | 17% | 1.00 | 29,489.60 |  |
| year2021 | 0.37 | 0.95 | -1.32 | 1.96 | 0.67 | 16% | 1.00 | 28,456.74 |  |
| ELPD |  |  |  |  |  |  |  |  | -31.95 |
| LOOIC |  |  |  |  |  |  |  |  | 63.90 |
| WAIC |  |  |  |  |  |  |  |  | 62.44 |
| Sigma |  |  |  |  |  |  |  |  | 1.00 |

**Table** :

| Parameter | Median | CI | CI Low | CI High | pd | ROPE % | Rhat | ESS | Fit |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| year2013 | -0.23 | 0.95 | -1.20 | 0.67 | 0.69 | 29% | 1.00 | 21,139.07 |  |
| year2014 | -0.13 | 0.95 | -1.11 | 0.76 | 0.62 | 31% | 1.00 | 21,628.28 |  |
| year2015 | 0.36 | 0.95 | -0.66 | 1.29 | 0.77 | 23% | 1.00 | 22,319.48 |  |
| year2016 | 0.97 | 0.95 | 0.16 | 1.75 | 0.99 | 0% | 1.00 | 18,342.51 |  |
| year2017 | -0.19 | 0.95 | -1.15 | 0.70 | 0.66 | 29% | 1.00 | 19,176.68 |  |
| year2018 | 0.15 | 0.95 | -0.79 | 1.07 | 0.62 | 30% | 1.00 | 18,328.11 |  |
| year2019 | 0.24 | 0.95 | -0.65 | 1.08 | 0.70 | 29% | 1.00 | 19,464.33 |  |
| year2020 | 0.15 | 0.95 | -0.73 | 0.98 | 0.63 | 32% | 1.00 | 18,569.06 |  |
| year2021 | 0.58 | 0.95 | -0.23 | 1.37 | 0.92 | 14% | 1.00 | 17,116.26 |  |
| ELPD |  |  |  |  |  |  |  |  | -302.82 |
| LOOIC |  |  |  |  |  |  |  |  | 605.63 |
| WAIC |  |  |  |  |  |  |  |  | 605.35 |
| Sigma |  |  |  |  |  |  |  |  | 1.00 |

**Table** :

| Parameter | Median | CI | CI Low | CI High | pd | ROPE % | Rhat | ESS | Fit |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IF\_5year | 0.46 | 0.95 | -0.05 | 1.03 | 0.96 | 13% | 1.00 | 15,310.55 |  |
| ELPD |  |  |  |  |  |  |  |  | -32.20 |
| LOOIC |  |  |  |  |  |  |  |  | 64.40 |
| WAIC |  |  |  |  |  |  |  |  | 62.92 |
| Sigma |  |  |  |  |  |  |  |  | 1.00 |

**Table** :

| Parameter | Median | CI | CI Low | CI High | pd | ROPE % | Rhat | ESS | Fit |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IF\_5year | 0.19 | 0.95 | 0.04 | 0.33 | 0.99 | 48% | 1.00 | 16,986.28 |  |
| ELPD |  |  |  |  |  |  |  |  | -307.04 |
| LOOIC |  |  |  |  |  |  |  |  | 614.09 |
| WAIC |  |  |  |  |  |  |  |  | 614.08 |
| Sigma |  |  |  |  |  |  |  |  | 1.00 |