

Figure 1: Realization of a Pareto (A) probability density function and (B) complementary cumulative distribution function compared against equivalent calculations on the HydroLAKES dataset.

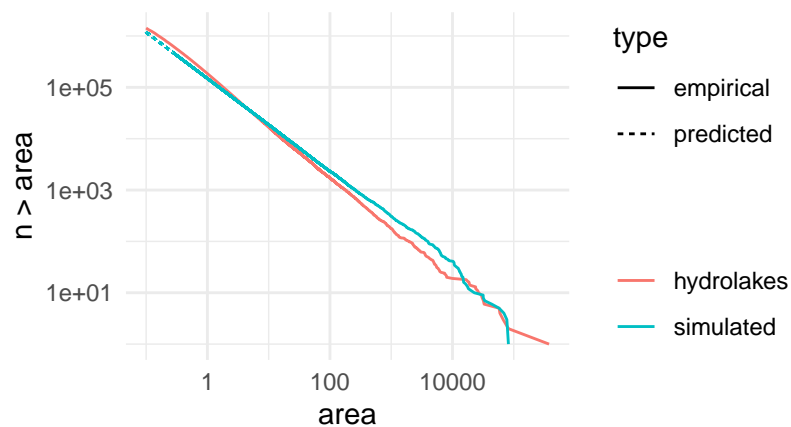


Figure 2: Censored lake area edf (solid line) and transformed cdf estimate (dashed line) compared against the HydroLAKES dataset.

```

1  data {
2    int<lower=0> N;
3    real x[N];
4  }
5  parameters {
6    real<lower=0> alpha;
7    real<lower=0> theta;
8  }
9  model {
10   real lpa[N];
11
12   theta ~ gamma(1, 3);
13   alpha ~ gamma(1, 3);
14
15   for (i in 1:N) {
16     lpa[i] = pareto_lpdf(x[i] | theta, alpha);
17   }
18
19   target += sum(lpa);
20 }

```

Figure 3: Stan model code

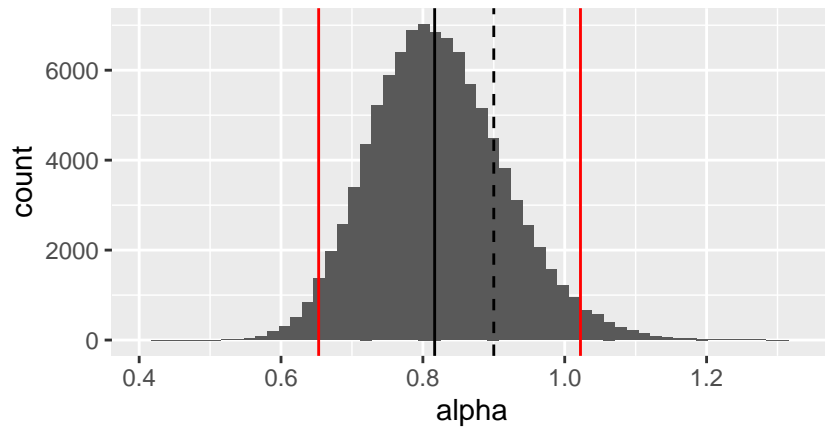


Figure 4: Median (black line) and central 95 percent interval estimates of alpha (red lines). Here the 'true' alpha is 0.9 and is marked with a dashed line.

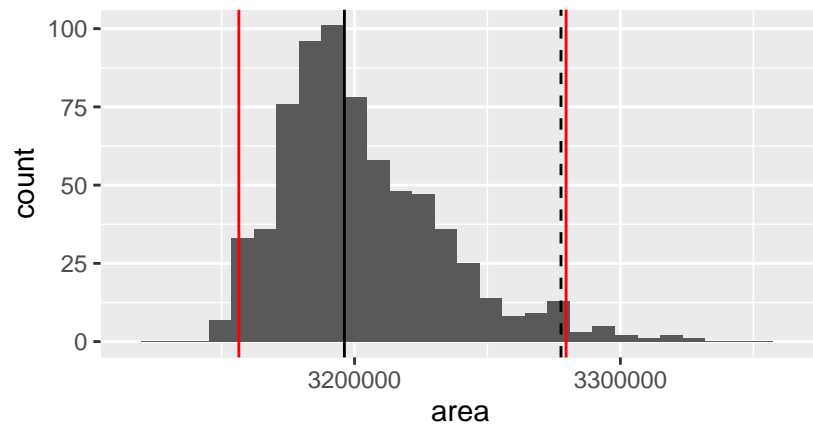


Figure 5: Median (black line) and central 95 percent interval estimates of total lake area (red lines). Here the true total lake area is marked with a dashed vertical line.