

Effective sample size (ESS) is one of the main tools for diagnosing the success of a particle filter. If you plot an object of class `pfilterd_pomp` (created by applying `pfilter` to a `pomp` object), the ESS is displayed. Suppose one or more time points have low ESS (say, less than 10) even when using a fairly large number of particles (say, 10^4). What is the proper interpretation?

A: There is a problem with data, perhaps an error recording an observation.

B: There is a problem with the model which means that it cannot explain something in the data.

C: The model and data have no major problems, but the model happens to be problematic for the particle filter algorithm.

D: At least one of A, B, and C.

E: Either A or B or both, but not C. If the model fits the data well, the particle filter is guaranteed to work well.