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ABSTRACT: In this article, I present an experiment that can be conducted in a calculus class to investigate the difference quotient and the derivative, using mathematical modeling with student-collected data. I also discuss an extension to the experiment through which students can discover the meaning of parameter estimation in a mathematical model.

The data is given on the spread of a cylinder of slime and one could also go after this directly with a differential equation model and estimate spread parameters.

KEYWORDS: data analysis, difference quotient, slime, model