

1135-C5-1504      **Jean Marie Linhart\*** (jmlinhart@cwu.edu), Department of Mathematics, Central Washington University, 400 E. University Way, Ellensburg, WA 98926. *Differential Equations and the United States Census Data.*

The United States Census data is a compelling data set for modeling with differential equations. If you introduce this data set at the beginning of the term, many students will suggest modeling it with the exponential function, from which the instructor can introduce the exponential differential equation and its assumption that the per-unit population growth is constant. The exponential model is easily criticized for growing without bound, and it is an easy conceptual leap to suggest a model that levels off after some time, leading to a steady-state population. Now the students can derive the logistic differential equation from the exponential differential equation; it has per-unit population growth that goes to zero as the population approaches its steady-state. If this is done at the beginning of the term, this is now a good jumping off point for introducing the method of separation of variables. This topic can also introduce slope fields and equilibria. (Received September 22, 2017)