1109-92-126 **Ronald E. Mickens*** (rmickens@cau.edu), Clark Atlanta University, Department of Physi, Atlanta, GA 30314. *A Comparative Analysis of Single Population Growth Models.*

Key Word: SIR models, population dynamics

Mathematical representations of SIR models for spread of disease often use for the growing susceptible population, S, the expression

$$\frac{dS}{dt} = \Pi - \mu S, \tag{1}$$

where Π is a constant production rate and $(1/\ \mu)$ is related to the "average" age of individuals of this population. For a variety of reasons, such a form is not suitable for actual use in trying to understand this type of disease spread. After stating several a priori conditions which should hold for any "valid" single population model, we examine in detail critical features of four single population growth models and compare the results they give for growth rates, estimates of times to population saturation, etc. All of these models, except for one, can be exactly solved in terms of the elementary functions. Conclusions are stated on the suitability of each single-population model, for S, for its incorporation into a full SIR type model. (Received January 28, 2015)