MODELING CESAREAN VERSUS NATURAL BIRTH DATA WITH SUSPICIOUS ZERO COUNTS SHOULD BE A PRELUDE TO HEALTHCARE COST ANALYSIS

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ABSTRACT

Skyrocketing healthcare cost is an alarming concern not only in the United States of America but also in many developing and developed nations. A prelude to any discussions of financial matters of healthcare is to secure the best fitting probability pattern of the data. For an example, why not consider and compare the probability patterns in the random number of cesarean (X) versus the random number of natural

(Y) childbirths in a day of the hospital data. A public opinion is that all cesarean births

are really warranted and the healthcare cost could be considerably reduced if it can be eliminated. Their aggregate N = X + Y denotes the total number of births in a day of the chosen hospital. The general expression for the correlation coefficient, ρ , between X and Y reveals when N, follows a Zero Inflated Modified Power Series Distribution (ZIMPSD) introduced by Gupta, *et al.* (1995). Special expressions for Zero Inflated Generalized Negative Binomial Distribution (ZIGNBD) and Zero Inflated Generalized Poisson Distribution (ZIGPD) are obtained as particular cases.

KEYWORDS

Zero Incidence, Inflated Modified Power Series Distribution (ZIMPSD), Zero Inflated Generalized Negative Binomial Distribution (ZIGNBD), Zero Inflated Generalized Poisson Distribution (ZIGPD), correlation coefficient (ρ), Genetics, Count models.

1. MOTIVATION AND LITERATURE SURVEY

In this beginning stage of the 21^{st} century, the much-needed reform in healthcare operations is felt in all nations of the world. Suppose of interest is the relationship between the random number of cesarean births (X) and the random number of natural births (Y) in a maternity wing of a hospital. Notice that X is a binomial random variable with parameters N (which is the total number of births in a day in maternity