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Probability Distributions of Open Birth Intervals and Their Use in Studying and Analyzing the Level of Fertility

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ABSTRACT

Assessment and prediction of fertility in human populations is a complex problem and this area of study has been receiving particular attention of demographers, social scientists, and gynecologists in the recent crisis of population explosion. The open birth interval is one of the most sensitive indexes for measuring fertility level in human population of the developing countries like Egypt, because it can perceive the effect of contraceptives and other factors affecting fertility. The effect of contraceptives can not be studied through closed birth intervals.

The present study aims to review some probability models of open birth interval, estimation of parameters of the models, and to apply the models to a random sample from Egypt Demographic and Health Survey (DHS, 1995).

Chapter one gives the description of the research problem, the objectives of the study, and a literature review on approaches to the

measurement of fecundability, birth intervals (closed and open) and postpartum amenorrhea.

Chapter two presents a set of models to determine the probability distribution of open birth intervals, and to study its properties. A general model of open birth interval is also formulated.

Chapter three discussed some important parametric and nonparametric methods to density function estimation (Pearsonian systems of densities and the kernel method).

The application study and its results are shown in chapter four. In this chapter an application of the models of the open birth interval to observed data taken from (DHS, 1995), estimation of parameters of the models, and the main properties of the open birth intervals are presented.

For the whole sample a comparison study of the four models reveals that, the estimates of parameters for model 2 give least Chi-square value. Thus the model 2 gives the best fit among all fitted models.