

“Never on Sunday”: Examining the shape of the distribution of births throughout the weekdays.

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Extended abstract

The analysis of the daily distribution of births in all developed countries in the world suggests a radical change in the post-war years. Until the end of the first post-war decade, births were more or less uniformly distributed across the week days. Thereafter, the daily life born deliveries in the developed countries suggest a systematic gradual decline in the last two days of the week, i.e. Saturdays and Sundays, with a corresponding increase in the other weekdays, especially Tuesday (Calot, 1981; Seiver, 1989; Sardon, 2005; Hawe and Macfarlane, 2001; Clainchard and Doisneau, 2002; Regnier-Loilier, 2010). This phenomenon might be related to practices of the medical services which, for obvious reasons, plan their working hours, especially regarding induced deliveries as well as deliveries by caesarean sections. The intensity and the starting time of this phenomenon, significantly differ between countries, while in some of them, the appearance of reactions, as well as awareness of the medical body, resulted to a reversal of this trend in recent years. In this work a comparative analysis of the daily fluctuations of births in European countries and the USA is attempted, considering among the European countries those countries that are representative of the various patterns and intensities, (Austria, France, Switzerland, Sweden, the Netherlands, Spain, Greece, Belgium, Portugal, Tcheque Republic, Bulgaria, Romania, Italy). For measuring the intensity of the phenomenon the following index is used,

$${}^tI_i = \frac{{}^tB_i / k}{{}^tB / n}$$

where, $'B_i$ is the total count of births taken place the i th day of the week at year t , $i=1,2,\dots,7$ (where 1 stands for Monday, 2 for Tuesday etc), $'B$ is the total number of births of the specific day throughout the whole year, k is the number of days i at year t , and n is the number of days in year t .

Interpretation: An index of 110 (or 90, respectively) indicates a day where there were 10% more (or fewer, respectively) births compared with an average day (base of 100).

Then time series analysis techniques are applied on these values, in order to provide a comparative analysis of the shape and the evolution of the daily fluctuations of births in the countries considered in the analysis. In addition using statistical clustering techniques, a classification of these countries according to the starting time, the progress and the intensity of this phenomenon is attempted and families of patterns are defined.

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