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Season-of-Birth as a prognostic factor of survival time follow a diagnosis of cancer

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Evidence of an association between survival time and date of birth would suggest an etiologic role for a seasonally variable environmental exposure occurring within a narrow perinatal time period. Risk factors that may exhibit seasonal epidemicity include diet, infectious agents, allergens, and antihistamine use. Typically data has been analyzed by simply categorizing births into months or seasons of the year and performing multiple pairwise comparisons. This paper present a statistically robust alternative, based upon a trigonometric Cox regression model, to analyze the cyclic nature of birth dates related to patient survival. Disease birth-date results are presented using a sinusoidal plot with peak date(s) of relative risk and a single P value that indicates whether an overall statistically significant seasonal association is present. Advantages of this derivative-free method include ease of use, increased power to detect statistically significant associations, and the ability to avoid arbitrary, subjective demarcation of seasons.

Biography

Dr. J. T. Efird completed his Doctorate in Epidemiology at Stanford University School of Medicine. He currently is an Associate Professor at Brody School of Medicine, East Carolina University (ECU) and has a joint appointment as Epidemiologist/Chief Statistician in the Center for Health Disparities Research. Prior to joining ECU, Dr. Efird was Director of the Biostatistics Facility at the John A. Burns School of Medicine (Honolulu, Hawaii) and an Associate Member of the Cancer Research Center of Hawaii. Dr. Efird's research interests include brain tumours, soft-tissue sarcomas, and HPV-related cancers.