NORMAL OR NOT?

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Although normality is a common assumption for many statistical procedures, it is hardly satisfied in practice. When the assumption is not maintained, some methods, such as transformations, assuming different parametric distributions or nonparametric approaches, can be seen as alternatives. In this study, the effect of the normality assumption on the analysis is investigated via two examples. In the first example, a data set on the length of hospital stay is reanalyzed by using count data approaches. This data was first analyzed by Houchens and Schoeps (1998) under the assumption of normality for the length of stay. Although interpretations under both assumptions are fairly similar, diagnostics suggest a much better model fit under non-normal situation. In the second example, missing cases in a longitudinal data set is imputed by using the method of conditional mean imputation. After transforming the response to satisfy the normality assumption of this method, it is observed that the data structure was so disturbed in the sense that imputed values were remarkably separated from the observed ones. On the other hand, imputed values which are obtained without transformation were satisfactory and were able to follow the structure even in their relationship with nuisance variables. Although methods assuming normality are well-developed in statistical theory and commonly used in practice, researchers should avoid the abuse of them, and be aware that this assumption can make a difference in outcome.