

Applying Multivariate and Univariate Analysis of Variance on Socioeconomic, Health, and Security Variables in Jordan

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Abstract : Many researchers have studied socioeconomic, health, and security variables in the developed countries; however, very few studies used multivariate analysis in developing countries. The current study contributes to the scarce literature about the determinants of the variance in socioeconomic, health, and security factors. Questions raised were whether the independent variables (IVs) of governorate and year impact the socioeconomic, health, and security dependent variables (DVs) in Jordan, whether the marginal mean of each DV in each governorate and in each year is significant, which governorates are similar in difference means of each DV, and whether these DVs vary. The main objectives were to determine the source of variances in DVs, collectively and separately, testing which governorates are similar and which diverge for each DV. The research design was time series and cross-sectional analysis. The main hypotheses are that IVs affect DVs collectively and separately. Multivariate and univariate analyses of variance were carried out to test these hypotheses. The population of 12 governorates in Jordan and the available data of 15 years (2000-2015) accrued from several Jordanian statistical yearbooks. We investigated the effect of two factors of governorate and year on the four DVs of divorce rate, mortality rate, unemployment percentage, and crime rate. All DVs were transformed to multivariate normal distribution. We calculated descriptive statistics for each DV. Based on the multivariate analysis of variance, we found a significant effect in IVs on DVs with $p < .001$. Based on the univariate analysis, we found a significant effect of IVs on each DV with $p < .001$, except the effect of the year factor on unemployment was not significant with $p = .642$. The grand and marginal means of each DV in each governorate and each year were significant based on a 95% confidence interval. Most governorates are not similar in DVs with $p < .001$. We concluded that the two factors produce significant effects on DVs, collectively and separately. Based on these findings, the government can distribute its financial and physical resources to governorates more efficiently. By identifying the sources of variance that contribute to the variation in DVs, insights can help inform focused variation prevention efforts.

Keywords : ANOVA, crime, divorce, governorate, hypothesis test, Jordan, MANOVA, means, mortality, unemployment, year

Conference Title : ICMCSSE 2018 : International Conference on Mathematical, Computational and Statistical Sciences and Engineering

Conference Location : Barcelona, Spain

Conference Dates : February 27-28, 2018