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DEPARTMENT OF
OFFENDER REHABILITATION

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Research Brief

CORRELATION BETWEEN ACTUAL TIME SERVED
AND SENTENCE LENGTH AND OFFENSE

Bureau of Planning,
Research and Statistics

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STATE OF FLORIDA
DEPARTMENT OF OFFENDER REHABILITATION

Correlation Between Actual Time Served
And Sentence Length And Offense

This study compares actual time in prison with sentence length and offense. The purpose is to determine whether sentence length or offense is more correlated with actual time served.

This study is part of a pilot project to predict future inmate populations. The prison population is a function of three factors; admissions, time served and releases. Specifically, its purpose is to find the best variable that will predict time served. Two variables were selected as criterion variables (length of sentence and offense). The subsequent analysis will test which variable is the best predictor of time served.

Multiple regression was used to test the correlation. Actual time served was computed by subtracting the inmates release date from his admission date. Length of sentence represents the maximum sentence length that is imposed on the inmate by the court. A total of twelve offenses were selected to represent the inmate population. The specific offense types captured approximately 90% of the prison population. The remaining 10% of the prison population was collapsed into one category (other offenses). Because of the nominal nature of the data, in the regression equation offenses were treated as dummy variables, taking on the values of either 0 or 1.

The reason for treating offenses as dummy variables (taking on the values of either 0 or 1) is because regression analysis operates under the assumption of interval scales. Offenses are nominal scales. Thus, by treating offenses as dummy variables, they take on the dimension of an interval scale.

Three regression equations were computed: First, a regression equation was computed for actual time served with sentence length and offense for total inmate releases from 1972-73 through 1975-76. Second, a regression equation was computed for actual time served with sentence length and offense for 1975-76 inmate releases. The final equation computed a correlation between actual time served and offense for 1975-76 inmate releases.

It was found in the first equation that the correlation between actual time served and sentence length was $R=.47$ with an $R^2=.22$. Entering the offenses, the total R^2 for the equation was .24. The correlation between actual time served and sentence length was increased by .0138 when the offenses were entered into the equation. The results for the second equation were similar to the first. The equation generated an $R^2=.435$ between actual time served and sentence length. Entering the offenses, the R^2 was increased to .456. This represents an increase of .02. It was expected that the correlation between actual time served with sentence length and offense would be greater for the 1975-76 inmate population than for the entire release population (72-73 through 75-76), because the data for the 1975-76 population is more complete and accurate than it is for the entire inmate population. Specifically, the data in the 1972-73 and 73-74 inmate release population contains a considerable amount of missing information.

The final equation generated an R^2 of .208 between actual time served and offense. However, it appears from the data that sentence length is more correlated than offense with actual time.

Therefore, the evidence presents two conclusions with respect to predicting future inmate releases. First, since sentence length is more correlated with actual time served than offense, we can exclude offense from projection models. In essence, this would generate a simple model to project inmate releases. Second, the correlation between actual time served and offense was $R^2=.208$. However, when the offenses were entered into the equation, the correlation between actual time served and sentence length was increased only slightly. The reason may be related to the high correlation between sentence length and offense. Based upon this information, a more accurate estimate of inmate releases may be generated when sentence length and offense are used in the same equation. The evidence suggests that there is a need for further research. Specifically, whether a regression equation based on sentence length predicts actual time served better than one based on sentence length and offense.

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