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# STUDIES OF CRIMINAL ACTIVITY IN THE REGION OF UKRAINE USING THE MATHEMATICAL METHODS

The aim of the paper is to study the basic general patterns and trends in time series crime regions of Ukraine within criminological modeling.

Dynamics and the crime rate in the region can be represented by the rate of criminal activity rate per 100 thousand inhabitants of a particular region for every single year from 1990 to 2012.

The highest average rate of criminal activity observed in Zaporizhzhya, Dnipropetrovsk, Luhansk, Sumy, Donetsk, Mykolaiv regions and Crimea. The lowest level of criminal activity in Uzhgorod, Chernivtsi, Ivano-Frankivsk, Lviv, Ternopil, Rivne and Volyn regions and in Kyiv.

The main socio-economic factor that determines the difference between the level of crime in the regions of Ukraine is the level of urbanization.

These graphics area can be divided into three groups according to the nature and intensity change rate of criminal activity. The first section includes regions where the largest peak rate of criminal activity in the 1995 − 1997 years. The second group includes regions where the largest peak factor accounts for 2000. The third − in 2004. To some extent this division is related to the difference in the orientation of regional economies.

If we consider the corresponding graph visualizes the rate of criminal activity on the territory of Ukraine, the highest are the same three peaks: in 1996, 2000 and 2004. Significantly lower than the peak observed in 2010. These peaks correspond to the greatest eco-nomic and social upheaval in Ukraine. After the 2009 rate starts to steadily increase, which continues today.

Fundamentally important to understand that the study of the causes and trends of regional crime must consider the following characteristics of the region: socio-demographic, economic, socio-cultural, and such, characterizing the material and technical base of law enforcement.

To determine the character of the time series of the rate of criminal activity in general in Ukraine and some socio-economic indicators carried out relevant research.

All calculated correlation coefficients − negative numbers, ie correlation in all cases is reversible. The most powerful is the relationship between the rate of criminal activity and the consumer price index found in the Autonomous Republic of Crimea, Vinnytsia, Donetsk, Luhansk, Mykolaiv, Rivne, Kharkiv, Kherson and Chernihiv regions. A strong correlation between the rate of criminal activity and government spending on social security and welfare (% of total expenditures) found in regions: Dnipropetrovsk, Lviv, Sumy regions and in Kyiv.

Regional crime prevention programs should be based on regional projections of the criminal activity of the population based on the results of correlation and regression analysis of the impact of various factors on crime and criminology further developments to be made within each region.