# Applications of a Spatial Analysis System to ERM Losses Management

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## Abstract

A following below geographic default monitoring system is designed to aggregate and effectively present information on default risk concentration in consumer loan portfolios: 1) Dividing an area of a bank's operation into relatively homogeneous geographic units where a bank has a loan portfolio of a reasonable size. 2) Constructing four funnel plots at 80% and 90% confidence levels define boundaries for five default risk groups. 3) Classification of the geographic units into the risk groups by location of their default rates on the funnel plots.4) Transferring loans' classification information onto geographic maps with assigning signal colours corresponding to the specific risk groups. 5) Final classification of the geographic units into risk groups based on clustering of the units of the same or close riskiness and consistency of their classification in consequent 3-5 time periods.6) Suggest an application of expansion or contraction lending policy intensity of which depends on a risk group the geographic unit belongs to. An application of this system to the default rate data simulated at the state level of the USA clearly demonstrates its capabilities and potential outcomes.