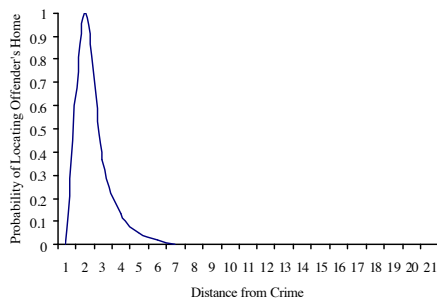# Using *CrimeStat* for Geographic Profiling

Brent Snook, Paul J. Taylor & Craig Bennell
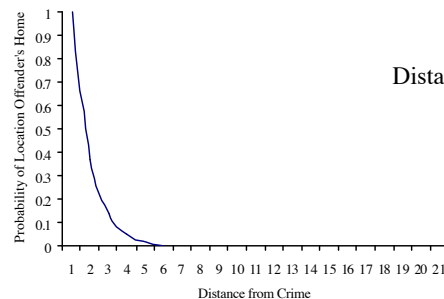Department of Psychology, University of Liverpool

A challenge for researchers providing investigative support is to use information about crime locations to prioritize geographic areas according to how likely they are to contain the offender's residence. One prescient solution to this problem uses *probability distance functions* to assign a likelihood value to the activity space around each crime location. A research goal is to identify the function that assigns the highest likelihood to the offender's actual residence, since this should prove more efficient in future investigations.

CrimeStat was used to test of the effectiveness of two functions for a sample of 68 German serial murder cases, using a measure known as *error distance*. The top figures below illustrate the two functions used and the bottom figures portray the corresponding effectiveness of the functions by plotting the percentage of the sample 'located' by error distance. A steeper effectiveness curve indicates that home locations were closer to the point of highest probability and that, consequently, the probability distance function was more efficient. In this particular test, no difference was found between the two functions in their ability to classify geographic areas.
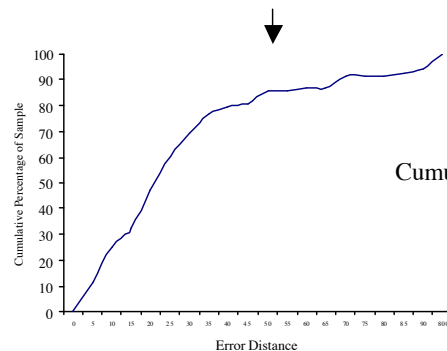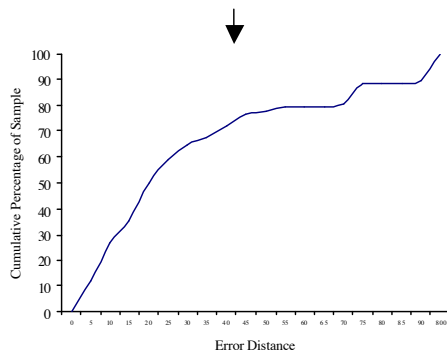

Truncated Negative Exponential   Negative Exponential

Distance Decay Model

Cumulative Error Distance

Original Article: Taylor, P.J., Bennell, C., & Snook B. (2002) *Problems of Classification in Investigative Psychology*. Proceedings of the 8th Conference of the International Federation of Classification Societies, Krakow, Poland