1067-O1-1318   **Mike P O'Leary*** (`moleary@towson.edu`), Department of Mathematics, Towson University, 8000 York Road, Towson, MD 21252. *Patterns in criminal offender distance decay.*

The geographic profiling problem in criminology is the problem of estimating the location of the home base of a serial offender based on the known locations of the criminal's offense sites. This is an operational problem of some importance for law enforcement agencies throughout the country.

Fundamental to any mathematical approach to this problem is an understanding of how offenders select targets, and one important component is the distance decay behavior of the offender. This curve gives the fraction of offenses that occur at a given distance from the offender's home base. Despite being well studied, there is no consensus as to the best mathematical form of the distance decay curve.

By appropriately rescaling the problem, we shall show that a simple a priori argument lead to a predicted distance decay curve that is a close match for the observed distance decay curves. We shall discuss these results and explain their significance for the geographic profiling problem. (Received September 20, 2010)