algorithms developed to more fully exploit gathered data could focus an agent's attention on only those events requiring investigation, and provide the basis for conducting social network analyses to gain intelligence on offender habits (Reference [9]). While analytical capabilities do not appear to have strongly influenced correctional agency selection of their EM vendors and products to date, tools comprising various combinations of statistical analysis procedures, data and text mining, and predictive modeling can be mission enabling through the discovery of hidden behavioral patterns and the prediction of future outcomes.

This paper briefly reviews research on the usage of location-based tracking to motivate an assessment of the potential role of advanced analytics in more strongly leveraging the capabilities of such systems. Relying in part on the results from a recent market survey of commercially-available analytics products suitable for use in correctional applications (Reference [10]), it presents several recommendations for deriving actionable information from GPS tracking data as an aid to managing community-released offender populations. Nevertheless, "… there has been little rigorous research evaluating the impacts of electronic monitoring," and questions remain about the efficacy of this approach in community supervision. "Policy-relevant research" is needed that is "focused toward understanding the potential for supervision with electronic monitoring to improve long-term outcomes" (Reference [11]).

2. GPS SYSTEM UTILIZATION IN OFFENDER MONITORING

In spite of the fact that there has been "… little scientific research documenting the effectiveness of electronic monitoring devices, especially for sex offenders" (Reference [12])[4], the number of early-release candidates has increased over the last 15 years. Early-release programs can reduce incarceration costs and jail overcrowding, and GPS devices render clients highly accountable, although "[e]lectronic supervision technologies by themselves do not foster pro-social behavior (or) reduce recidivism…." However, "[w]hen implemented and operated within an overall strategy of behavioral modification … there is the potential for some electronic supervision tools to enhance community supervision" outcomes (Reference [4]). A recent Danish study by Andersen and Andersen on the social welfare dependence of serving a sentence under electronic monitoring rather than in prisons supports this view. Those authors found that "[e]lectronic monitoring is less harmful than imprisonment on the life-course outcomes of offenders." They conclude that because EM could be less costly than incarceration, "efforts to extend the use of electronic monitoring in the United States could be accelerated" (Reference [14]).

A review of state codes during the late 2000's by Button et al. (Reference [12]) found that 46 states and the District of Columbia had "some type of legislation governing the use of electronic monitoring;" an extensive summary of the legislative patterns found by these authors appears in their Table 1[5]. Of these 47 "states," 27 had "specific policies for monitoring sex offenders, with 19 of these states requiring electronic monitoring for sex offenders." In an early 2015 news article, Wolf (Reference [15]) claimed that "[m]ore than 40 states have passed laws in

[4] The most thorough review of such work (at least as of the 2009 publication date of this reference) was conducted by Renzema and Mayo-Wilson (Reference [13]).

[5] Colorado, Kentucky, Minnesota, and Nevada did not have some type of legislation governing the use of EM as of that date.