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BIG DATA PREDICTIVE ANALYTICS: HOW SMART COMMUNITIES BECOME HEALTHY COMMUNITIES THROUGH BIG DATA INFORMED PUBLIC POLICY FORMULATION AND IMPLEMENTATION

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Toward application by policy and program planners working within the nexus linking public administration and public health in supporting sustainable, built, complex adaptive healthy communities; predictive big data analytics is a series of emerging datascience methods by which critical connections are made and strengthened through the sharing and data mining of massive quantities of data located across diverse public datasets. The days of studying and working in any one discipline or niche are quite likely over; and, the polymath mind and related analytical techniques rules the process of future public policy planning in solving social problems that impact the health and welfare of communities. Big data predictive analytical tools provides communities with the power to make better informed decisions rather than relying on guesswork based on inadequate data access and analysis. Prediction from the massive amount of existing data is empowering, but, not perfect; however, any real time driven prediction remains more powerful and satisfying than merely relying on a public agency's best guess. The concept of big data reflects the reality today that massive amounts of data are stored in a variety of depositories; and, are awaiting download and analysis by public community planners and others. Big data is characterized by volume, velocity, and variety. Volume is easy to understand. There is so much data stored it is characterized as big or massive and it is now measured in zettabytes (bytes with 20 zeros following). Velocity is also a characteristic since big data moves through the network with lightning speed. Further complicating how big data is downloaded and analyzed is the almost infinite variety characterizing the type of data and its storage format as it arrives and is stored in various massive databases under widely differing categories which makes data mining complicated. These characteristics have driven the development of new statistical analysis tools capable of downloading massive amounts of data (volume) at high rates of speed as new data arrives (velocity) thus providing real-time updates, and mines critical information regardless of how it is stored (variety) while not drilling down to individual identities thus ensuring privacy. This revolution in data management and analysis has created a new kind of professional; the data scientist who combines knowledge of computers with statistics and knowledge of the environment of smart, healthy communities in the 21st century. The benefits are readily available; but, the trajectory and speed of progress are accelerating in the direction of improved prediction in complex adaptive systems where once politically driven agency agenda specific best guesses were the norm with potentially unacceptable failure rates and frequent misuse of scarce community resources invested in a less than optimal direction.

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