This SpringerBrief mainly focuses on effective big data analytics for CPS, and addresses the privacy issues that arise on various CPS applications. The authors develop a series of privacy preserving data analytic and processing methodologies through data driven optimization based on applied cryptographic techniques and differential privacy in this brief. This brief also focuses on effectively integrating the data analysis and data privacy preservation techniques to provide the most desirable solutions for the state-of-the-art CPS with various application-specific requirements.