Unmarked Burial Identification at the Frankfort, KY Cemetery using Ground Penetrating Radar and LIDAR data through ArcGIS

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In many cemeteries of the Commonwealth, older sections delineated for those of the socio-economical challenged may contain unmarked graves. This occurs for a number of reasons, including lack of accurate historical records, changes in cemetery boundaries over time, and headstone displacement. Many of these places are of significant historical and cultural value, especially from a genealogical perspective. The most common methods of probing and exploratory excavation are invasive, labor intensive, and time consuming and highlights the need for alternative methods for identifying unmarked graves. In this current project, the use of ground-penetrating radar (GPR) and light detection and ranging (LiDAR) is used successfully for identifying unmarked graves with a high rate of consistency. GPR and LIDAR results are overlaid using geographic information system (GIS) in order to assess the spatial correlations in signal variations in each dataset. The GPR unit used did not contain a spatial component, however a handheld GPS device was used in order to verify the exact placement. Preliminary results indicate that while the GPR is very effective at identifying potential unmarked burial locations, it is expensive and requires an onsite expert to definitively interpret the results. The effectiveness of the LiDAR derived elevation measurements are less conclusive.