Rural public libraries hold economic, cultural, and social capital assets in trust for the benefit of their communities. Filling a gap in the study of those assets, 2012 through 2015 rural library statistics from the Institute of Museum and Library Services were combined with public data from the United States Departments of Agriculture and Health and Human Services: (1) reveal interrelationships between rural public library assets and socioeconomic factors, (2) explore the implications of those relationships in terms of potential community services and asset strengths, (3) investigate differences in those relationships over time, and (4) consider rural library asset sustainability. Exploring asset structures through supervised classification data mining of four rural library classes (distance from urban areas and urban clusters, governance structure, service area size, and geographic region) revealed that, with the exception of non-librarian staff, rural public library median per capita assets did not generally decrease as distances from urban areas and urban clusters increased; there were no clear asset demarcations between governance structures; the smallest rural libraries generally had the highest median per capita assets, including revenue from non-local sources; and rural library asset variations between and within regions were largely explained by socioeconomic factors. Furthermore, rural-urban boundaries continued to blur during the period, state revenue constraints decreased the likelihood of small rural library sustainability, volunteers appeared to substitute for paid staff in the smallest rural libraries and supplemented staff in larger rural libraries, and persistent deep child poverty was found in many of the counties served by rural public libraries. Recommendations for facilitating rural public libraries’ leadership in building community and library sustainability included: (1) revised reporting of rural-urban designations to increase awareness of government programs and benefits available to the library’s community, (2) increased advocacy for rural library sustainability through effective messaging of community engagement successes and cost-benefit studies of rural libraries as access providers for government benefits and services, (3) revised reporting or targeted studies to capture the public value created by rural library volunteers, and (4) the design of national, fiscally sustainable programs supporting public library leadership in measurably decreasing child poverty rates.