ANALYZING ROADS' LENGTH AS A PROXY FOR IMPERVIOUS AREAS IN THE WATERSHEDS OF PUERTO RICO USING SPATIAL ANALYSIS AND STATISTICAL PROGRAMS

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The study of impervious areas is often used to determine the impacts of constructed areas on, or near, the hydrographic and land resources of a specific area. Although roads and paved areas are categorized as high contributors for impermeability, there is no such study that correlates total impervious areas (TIA) to the roads' length in Puerto Rico. In this study, it is assessed the frequency of TIA, based on a land cover dataset acquired at the Multi-Resolution Land Characteristics Consortium, and the total road length (TRL) by watershed utilizing TIGER/Line information from the U.S. Census Bureau. The developed methodology, mediated by spatial analysis and statistical programs, allowed to correlate the extent of TIA with the TRL for each watershed. The resulting linear model presented a strong-linear relationship between TIA and TRL ($R^2 = 0.895$) which indicates that the available roads length data can be used as a proxy for TIA on the Puerto Rico watersheds.