Drawing the Color Line: A Geospatial Analysis of Redlining, Government Assistance Programs, and Their Future

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The Supplemental Nutrition Assistance Program (SNAP) aims to improve Quality of Life (QoL) for food-insecure Americans, but it faces challenges from legislation that seeks to cut SNAP benefits over the next decade and freeze them during government shutdowns. This study aimed to quantitatively analyze the relevance of this trend on individual communities across the coterminous United States, via the Mapping Inequality Database and the United States Census Tracts. A 73,724-element interactive mapping database was created in ArcGIS Pro using Geospatial Joining and manual database creation techniques. 302 variables from the United States 2010 Decennial Census and Food Research Atlas were then manually added to each Census Tract's new profile. To quantify SNAP-based QoL per community, the variables of poverty rate and access to food (defined by a novel statistical abstraction) were analyzed per population and then averaged into a 100-point scale. A series of one-variable descriptive statistics compared the distributions and density of SNAP funding allocations across redlined and non-redlined communities, finding that 96.8% of SNAP beneficiaries reside in non-redlined communities. SNAP benefit allocation also showed a weak positive correlation with QoL in redlined communities ($p = 0.001$, $r = 0.024$) and a weak negative correlation in non-redlined communities ($p = 0.002$, $r = 0.013$). Based on this mathematical model, current legislation is projected to decrease QoL in redlined and non-redlined communities by an average of 8 and 9 points, respectively. The study provides apolitical, quantitative support for the predicted decrease in QoL associated with SNAP benefit removal.

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