Abstract: The Synergystic Disadvantage of Historical Institutionalized Racism in Chicago and COVID-19 on Nutritional Quality and Access for Minority Populations

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Objectives: The Supplemental Nutrition Assistance Program (SNAP) is a long standing initiative to reduce food insecurity in low-income households. We first demonstrate a significant racial disparity in food accessibility associated with redlining and then explore the association with SNAP usage. Computational analysis was performed before and after COVID to understand the effects of the federal COVID SNAP boost policies and how minority communities continue to suffer the long-term effects of redlining.

Methods: HOLC mapping data was collected for Chicago, a well-known redlined city. Regions were assigned grades with “A” (best) through “D” (worst) and mapped with census tracts to obtain percentages of households using food stamps. Racial distributions for each grade were tabulated. Food accessibility data up to 2019 was then derived from USDA Economic Research Atlas. Statistical tests compared HOLC grades to mean food stamps (ANOVA) & access (Chi-Sq). SNAP F-statistic results were obtained for pre-COVID (2016-2019) and COVID (2020-2021) eras. Results were compared to determine the impacts of COVID SNAP boosts.

Results:
84% of Black and Hispanic residents resided within C and D grade tracts as compared to 63% of White residents. The proportions of tracts without half-mile access to a supermarket were 0 (A), 0.1163 (B), 0.2604 (C), and 0.4894 (D). Food inaccessibility was significantly lower for grade A, B, and C tracts than grade D tracts ($p = 0.04204$, 0.0003295, 0.01125). With regards to SNAP, larger F-statistic values imply more significant differences between food stamp rates. Pre-COVID results (A=0.024, B=0.194, C=0.327, D=0.417; $F=26.17$, $p<0.001$) displayed more inequality than COVID era (A=0.031, B=0.195, C=0.303, D=0.411;$F=9.63$, $p<0.001$) due to larger F-statistic.

Conclusions: Grade C and D redlined regions in Chicago have significantly lower access to food and demonstrated decreases in SNAP usage disparity during COVID between HOLC graded regions, even after SNAP boosts. Higher-rated regions A and B increased in SNAP usage proportion, while C and D decreased, indicating the SNAP boost policy was not completely successful in aiding minority commuities. Historical racism continues to affect community food insecurity, and more robust infrastructure is necessary to put effective food insecurity policies into place.

Funding Sources: None