

Food Insecurity Predicts Urban Gun Violence

Food insecurity (FI), defined as inadequate access to affordable and quality nutrition, has negative health consequences. FI and violence share similar root causes, such as poverty, yet, limited data exist on the relationship between FI and gunshot injury (GSI).

Both of these public health issues affect all individuals across the lifespan but have been shown to disproportionately afflict urban areas. Understanding the relationship between GSI and poor food access may help to tailor service provisions and provide targets for injury prevention.

Therefore, the aim of this study was to determine the association of FI with gunshot injury (GSI) incidence.

Methods: Researchers performed a retrospective review of all patients from 2012 to 2018 who sustained a GSI and resided within the city of Atlanta, GA. Food access data was abstracted from the US Department of Agriculture. Researchers analyzed the impact of FI, low food access (LA), and low food access with no vehicle (LANV) on the incidence of GSI using Poisson regression. Researchers also compared high-risk zip codes for GSI, FI, LA, and LANV using geospatial analysis.

Findings:

- *FI* (incidence rate ratio [IRR] 4.05, 95% CI 3.98-4.13, $P < .0001$), *LA* (IRR 2.97, 95% CI 2.92-3.03, $P < .0001$), and *LANV* (IRR 2.58, 95% CI 2.55-2.62, $P < .0001$) were significant predictors of GSI incidence.
- The FI model was superior to the LA and LANV models. Geospatial analysis demonstrated that both FI ($P < .0001$) and LANV ($P < .0001$) were significantly associated with GSI, while LA was not ($P > .05$).
- Geography imparts a significant effect as a majority of the GSIs occurred in patients residing in only a few of the city's zip codes. See Figure 1 below.

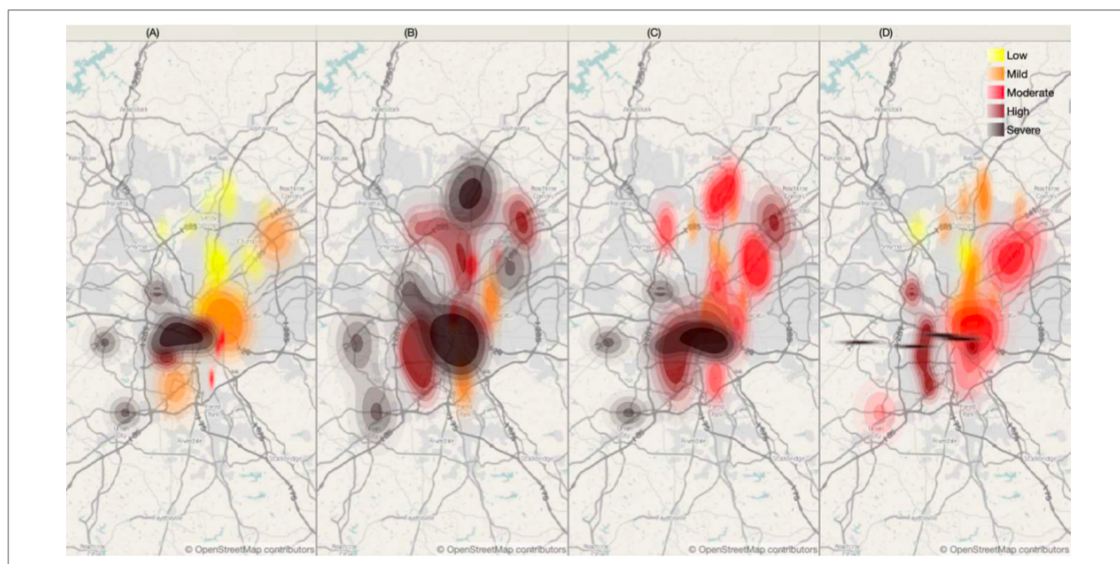


Figure 1. Visual cluster analysis of (A) GSI, (B) low access, (C) FI, and (D) low access, no vehicle in Atlanta, GA, USA.

Discussion: The grocery industry in the United States uses “supermarket redlining” and decisions to erect food outlets are based on stereotypes, race, and reputation of a neighborhood. As a result, food stores tend to avoid habitation in urban cities and preferentially establish in suburban neighborhoods, making access for inner-city individuals a challenge. FI becomes a chronic source of stress, particularly for the economically and socially disadvantaged. Researchers of this study believe low income or limited mobility coupled with greater distances from food access is what truly drives the increased risk of GSI. The effects of FI have also been shown to endure through generations, which supports the need to screen for low food access. However, screening for FI by health care professionals occurs infrequently. FI screening is of great public health importance, and targeting FI to reduce gun violence provides an innovative concept.

Citation:

Smith, R.N., Williams, K.N., Roach, R.M., and Tracy, B.M. "Food Insecurity Predicts Urban Gun Violence" *The American Surgeon* (2020): 1-6.

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