

## A Quantitative Case Study Analysis of Store Format Contributors to U.S. County Obesity Prevalence in Virginia

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**Abstract :** Food access; the availability, affordability, convenience, and desirability of food and beverage products within communities, is influential on consumers' purchasing and consumption decisions. These variables may contribute to lower dietary quality scores and a higher obesity prevalence documented among rural and disadvantaged populations in the United States (U.S.). Current research assessing linkages between food access and obesity outcomes has primarily focused on distance to a traditional grocery/supermarket store as a measure of optimality. However, low-income consumers especially, including U.S. Department of Agriculture's Supplemental Nutrition Assistance Program (SNAP) participants, seem to utilize non-traditional food store formats with greater frequency for household dietary needs. Non-traditional formats have been associated with less nutritious food and beverage options and consumer purchases that are high in saturated fats, added sugars, and sodium. Authors' formative research indicated differences by U.S. region and rurality in the distribution of traditional and non-traditional SNAP-authorized food store formats. Therefore, using Virginia as a case study, the purpose of this research was to determine if a relationship between store format, rurality, and obesity exists. This research applied SNAP-authorized food store data (food access points for SNAP as well as non-SNAP consumers) and obesity prevalence data by Virginia county using publicly available databases: (1) SNAP Retailer Locator, and; (2) U.S. County Health Rankings. The alpha level was set a priori at 0.05. All Virginia SNAP-authorized stores (n=6,461) were coded by format - grocery, drug, mass merchandiser, club, convenience, dollar, supercenter, specialty, farmers market, independent grocer, and non-food store. Simple linear regression was applied primarily to assess the relationship between store format and obesity. Thereafter, multiple variables were added to the regression to account for potential moderating relationships (e.g., county income, rurality). Convenience, dollar, non-food or restaurant, mass merchandiser, farmers market, and independent grocer formats were significantly, positively related to obesity prevalence. Upon controlling for urban-rural status and income, results indicated the following formats to be significantly related to county obesity prevalence with a small, positive effect: convenience (p=0.010), accounting for 0.3% of the variance in obesity prevalence; dollar (p=0.005; 0.5% of the variance), and; non-food (p=0.030; 1.3% of the variance) formats. These results align with current literature on consumer behavior at non-traditional formats. For example, consumers' food and beverage purchases at convenience and dollar stores are documented to be high in saturated fats, added sugars, and sodium. Further, non-food stores (i.e., quick-serve restaurants) often contribute to a large portion of U.S. consumers' dietary intake and thus poor dietary quality scores. Current food access research investigates grocery/supermarket access and obesity outcomes. These results suggest more research is needed that focuses on non-traditional food store formats. Nutrition interventions within convenience, dollar, and non-food stores, for example, that aim to enhance not only healthy food access but the affordability, convenience, and desirability of nutritious food and beverage options may impact obesity rates in Virginia. More research is warranted utilizing the presented investigative framework in other U.S. and global regions to explore the role and the potential of non-traditional food store formats to prevent and reduce obesity.

**Keywords :** food access, food store format, non-traditional food stores, obesity prevalence

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