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Food Environment Access for Obesity Risk in Suburban Adolescent Cohorts

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Abstract

The escalating prevalence of obesity among adolescent populations represents a critical public health challenge globally, with suburban environments presenting unique spatial and infrastructural dynamics that significantly influence dietary behaviors. This paper presents a comprehensive academic investigation into predicting obesity risk by analyzing food environment access through a mixed evaluation framework specifically tailored for suburban adolescent cohorts. Traditional approaches to understanding the obesogenic environment have often relied either exclusively on quantitative geographic information system metrics or solely on qualitative self-reported dietary surveys. By contrast, this study proposes a robust mixed evaluation methodology that seamlessly integrates objective spatial accessibility data concerning fast food outlets and supermarkets with subjective, lived-experience data regarding adolescent dietary habits and nutritional choices. Through extensive spatial mapping and rigorous cohort surveying, the research explores how the proximity and density of specific food retail nodes correlate with elevated body mass index percentiles in youth. The findings elucidate that suburban areas, often characterized by high automobile dependency and fragmented pedestrian infrastructure, uniquely exacerbate the risk factors associated with food swamps. By synthesizing these diverse data streams, the predictive model demonstrates enhanced accuracy in identifying high-risk demographic clusters compared to isolated evaluation methods. The insights derived from this study hold profound implications for urban planning, public health policy, and targeted nutritional interventions aimed at mitigating adolescent obesity in rapidly expanding suburban landscapes.

Keywords: Adolescent Obesity; Food Environment; Spatial Accessibility; Mixed Evaluation; Obesity Risk

1. Introduction

1.1 Background of the Study

The global pandemic of adolescent obesity has garnered unprecedented attention from public health officials, urban planners, and epidemiological researchers over the past several decades. As urbanization accelerates and lifestyle patterns shift toward increasingly sedentary behaviors, the physiological and metabolic health of youth has deteriorated at an alarming rate. Within this broader context, the structural configuration of the built environment has emerged as a fundamental determinant of health outcomes. Specifically, the food environment, which encompasses the physical presence, spatial distribution, and accessibility of various food retail outlets, plays an instrumental role in shaping the dietary choices available to local populations [1]. Suburban areas, in particular, present a unique set of geographical and social paradigms. Unlike dense urban centers that often boast a mix of public transportation and walkable amenities, or rural areas characterized by vast distances between commercial nodes, suburban regions are typically designed around automobile dependency. This structural reliance on vehicles inherently limits the independent mobility of adolescents, thereby restricting their food choices to the immediate vicinity of their homes, schools, or the commuting routes navigated by their parents [2]. Consequently, the localized suburban food environment becomes a highly concentrated arena where the availability of hyper-palatable, energy-dense, and nutritionally deficient foods can exert a disproportionate influence on the developmental trajectories of young people.

To systematically comprehend the etiology of this health crisis, researchers have increasingly turned to the concept of the obesogenic environment. This theoretical construct suggests that certain environments are fundamentally structured to promote weight gain and discourage weight loss by facilitating high caloric intake and minimizing physical energy expenditure [3]. In suburban adolescent cohorts, the manifestation of the obesogenic environment is frequently observed through the proliferation of food swamps, defined as areas where there is a sheer overabundance of fast food chains, convenience stores, and junk food outlets relative to vendors offering fresh, whole, and nutritious foods. Adolescents navigating these spaces are subjected not only to the physical convenience of these unhealthy options but also to aggressive localized marketing and the normative social behaviors of their peer groups [4]. Understanding the nuanced interaction between these spatial realities and the physiological outcomes of the adolescent demographic requires an analytical approach that transcends simplistic correlations, necessitating a deeply integrated evaluation of both the physical space and the human behavior within it.

1.2 Research Objectives and Significance

The primary objective of this comprehensive study is to develop, implement, and validate a mixed evaluation framework capable of accurately predicting obesity risk among suburban adolescents based on their differentiated access to various elements of the local food environment. In pursuit of this overarching goal, the research seeks to systematically deconstruct the specific spatial variables that contribute to elevated body mass index percentiles. By capturing high-resolution geographic data detailing the exact coordinates of supermarkets, fast food restaurants, and local convenience stores, the study aims to quantify the objective physical accessibility constraints and opportunities faced by the suburban youth population. However, recognizing the inherent limitations of purely spatial analyses, a secondary but equally critical objective is to integrate qualitative, survey-based data that captures the subjective dietary behaviors, socio-cultural influences, and nutritional literacy of the adolescents themselves.

The significance of this research lies in its methodological innovation and its direct applicability to public health interventions. Historically, epidemiological models predicting obesity risk have struggled with the semantic gap between physical proximity and actual dietary consumption. A teenager may live adjacent to a well-stocked supermarket but, due to socioeconomic constraints or personal preference, predominantly consume highly processed foods from a nearby gas station. By utilizing a mixed evaluation approach that marries geographic information system mapping with comprehensive dietary surveys, this study bridges that critical gap. The resulting predictive model is designed to offer a highly granular, context-aware understanding of obesity risk that can directly inform municipal zoning laws, school district health initiatives, and community-level nutritional education programs. Ultimately, the findings are intended to empower policymakers with the empirical evidence necessary to dismantle structural health inequities and foster suburban environments that actively support adolescent health and well-being rather than systematically undermining it.

2. Literature Review on Food Environments and Obesity

2.1 Spatial Access to Fast Food and Supermarkets

The relationship between the spatial distribution of food retail outlets and the subsequent health outcomes of localized populations has been a subject of extensive academic inquiry. Foundational studies in spatial epidemiology have frequently operationalized food access by measuring the linear distance or the network travel time from a residential address or a school campus to the nearest food vendor [5]. These investigations consistently highlight a troubling correlation: increased proximity to fast food restaurants and convenience stores is highly predictive of increased caloric intake and elevated obesity rates. In suburban contexts, where zoning regulations often cluster commercial activities along major arterial roads, neighborhoods can easily become physically isolated from full-service supermarkets that provide essential fresh produce [6]. This phenomenon is often discussed through the lens of food deserts, regions completely devoid of accessible healthy food options. However, recent scholarly discourse has shifted toward identifying suburban regions as food swamps rather than deserts, arguing that the primary risk factor is not the absence of food, but rather the overwhelming inundation of highly processed, obesogenic food options that overshadow any available healthy alternatives [7].

Further complicating the spatial analysis of food environments is the concept of the activity space, which represents the full geographic area that individuals interact with throughout their daily routines. Traditional research heavily relied on residential buffers, assuming that individuals procure the vast majority of their food near their homes. Yet, contemporary spatial studies have demonstrated that for adolescents, the food environment surrounding their schools and the commuting corridors between home and school are often far more influential in dictating their independent food purchases [8]. Furthermore, the density of unhealthy food outlets within these specific activity spaces has been shown to exhibit a dose-response relationship with the consumption of sugar-sweetened beverages and high-fat snacks [9]. Despite these critical insights, purely quantitative spatial studies remain fundamentally limited. They can map the potential for exposure to unhealthy foods but cannot confirm actual consumption patterns, thereby introducing a degree of ecological fallacy into the predictive models. This methodological limitation underscores the necessity of moving beyond simple proximity metrics and integrating comprehensive behavioral data to build more accurate predictive architectures for suburban populations.

2.2 Adolescent Dietary Behaviors in Suburban Contexts

Complementing the spatial analyses of food environments, a substantial body of literature in nutritional sociology and behavioral psychology has focused on the qualitative aspects of adolescent dietary choices. Adolescence is a critical developmental window characterized by increasing autonomy, the establishment of lifelong habituation patterns, and a heightened susceptibility to peer influence. In suburban environments, these developmental milestones intersect with specific socio-spatial constraints. For instance, the lack of robust public transportation often means that suburban adolescents are reliant on school buses or parental chauffeuring, which can centralize their independent social interactions around specific commercial nodes, such as strip malls or fast food establishments located near educational facilities [10]. Within these spaces, the consumption of fast food transcends mere sustenance; it becomes a deeply ingrained social activity, a mechanism for peer bonding, and a symbol of growing independence from parental dietary control [11].

Qualitative research methodologies, including extensive dietary recall surveys, focus group discussions, and ethnographic observations, have been instrumental in uncovering the underlying motivations driving adolescent food choices. These studies reveal that convenience, taste preference, and affordability consistently outrank nutritional value in the decision-making hierarchy of teenagers. Moreover, the pervasive nature of targeted marketing within the suburban food environment, such as promotional deals heavily advertised on the exteriors of convenience stores, exerts a powerful influence on impulse purchasing behaviors. While these qualitative insights are invaluable for understanding the why behind adolescent consumption patterns, they often lack the objective spatial context necessary to scale up into predictive risk models. Researchers have noted that adolescents are notoriously unreliable when estimating distances or conceptualizing the broader physical layout of their neighborhoods, making self-reported spatial data highly error-prone. Therefore, the synthesis of rigorous spatial metrics with nuanced behavioral data represents the frontier of contemporary epidemiological research, promising a more holistic and predictive understanding of the complex mechanisms driving adolescent obesity.

3. Theoretical and Conceptual Framework

3.1 The Obesogenic Environment Hypothesis

The foundational theoretical architecture of this study is anchored in the Obesogenic Environment Hypothesis. This theoretical paradigm posits that the contemporary epidemic of obesity cannot be adequately explained by shifting human genetics or isolated failures in individual willpower. Instead, it argues that modern human environments have been systematically engineered in ways that inherently promote energy imbalance [12]. In the specific context of suburban infrastructure, this environment is characterized by sprawling residential developments that discourage active transportation, such as walking or cycling, coupled with the ubiquitous availability of cheap, calorically dense food options. The hypothesis emphasizes that human biological systems, which evolved in environments of caloric scarcity to fiercely store energy, are fundamentally mismatched with the modern suburban landscape of caloric superabundance and physical passivity [13].

To effectively operationalize the Obesogenic Environment Hypothesis for this research, it is imperative to disaggregate the concept into measurable environmental variables. The framework categorizes the food environment into two distinct but overlapping domains: the community nutrition environment and the consumer nutrition environment. The community nutrition environment pertains to the macroscopic spatial distribution, density, and geographic accessibility of various food outlets within the defined suburban cohorts. It involves quantifying exactly how many fast food chains versus fresh produce markets are located within a specific radius of schools and neighborhoods [14]. Conversely, the consumer nutrition environment addresses what individuals encounter once they cross the threshold of a food outlet. This includes the internal pricing structures, the placement of products, the nutritional quality of the offerings, and the aggressive marketing tactics utilized to promote unhealthy items [15]. By utilizing this dual-layered theoretical lens, the research can systematically evaluate not only the physical pathways that lead adolescents to specific food sources but also the immediate environmental cues that ultimately dictate their purchasing and consumption behaviors.

3.2 Integrating Mixed Evaluation ParadigMS

To capture the multidimensional nature of the obesogenic environment as defined above, the conceptual framework necessitates a mixed evaluation paradigm. Traditional singular methodological approaches, whether purely spatial or purely behavioral, invariably yield an incomplete diagnostic picture of obesity risk. The integration of mixed evaluation paradigms is designed to create a synergistic analytical model where the objective structural data acts as a foundational base, which is subsequently modulated and refined by the subjective, experiential data of the cohort. This theoretical integration operates on the premise that objective spatial exposure to food swamps represents the baseline probability of risk, while the subjective dietary behaviors and psychosocial factors act as critical mediators that can either amplify or mitigate that baseline risk.

Under this integrated framework, risk prediction is conceptualized as a dynamic function of interaction rather than a static geographic state. For example, the theoretical model anticipates that an adolescent residing in a highly saturated fast food environment who also exhibits high levels of independent spending power and low nutritional literacy will demonstrably exhibit the highest predicted risk for elevated body mass index. Conversely, an adolescent in the same physical environment who benefits from strong familial dietary interventions and packed meals will exhibit a significantly lower predicted risk, demonstrating the mediating power of behavioral variables. This framework dictates that the predictive modeling must employ complex, multi-layered statistical techniques capable of weighing these disparate data types concurrently. Ultimately, the integration of these paradigms provides a comprehensive theoretical scaffold that guides the subsequent data collection, processing, and analysis, ensuring that the final predictive model is deeply rooted in a holistic understanding of the adolescent experience within suburban landscapes.

4. Methodology and Study Design

4.1 Cohort Selection and Demographic Profiling

The empirical foundation of this study relies on a meticulously selected cohort of adolescents residing in rapidly developing suburban districts. To ensure a representative and robust sample, a stratified random sampling technique was employed across five distinct suburban school districts, capturing a diverse cross-section of socioeconomic and demographic backgrounds. The inclusion criteria were strictly defined to include adolescents between the ages of thirteen and eighteen who have resided in their current suburban neighborhoods for a minimum of two consecutive years. This residency requirement was critical to ensure that the participants had sustained exposure to the local food environment being analyzed. Informed consent was systematically obtained from both the participating adolescents and their legal guardians, adhering strictly to institutional ethical review standards.

The final cohort comprised a total sample size large enough to provide high statistical power during the predictive modeling phases. Upon enrollment, comprehensive demographic and baseline anthropometric data were collected by trained public health nurses within the school facilities. Standardized protocols were utilized to measure height and weight, from which the body mass index was calculated. These raw measurements were subsequently converted into percentiles based on established national growth charts to accurately categorize weight status and baseline obesity risk. Table 1 provides a detailed summary of the demographic characteristics and baseline anthropometric profiling of the selected suburban adolescent cohort, ensuring complete transparency regarding the population under study.

Table 1: Demographic and Anthropometric Characteristics of the Suburban Adolescent Cohort

Demographic Variable	Total Sample Count	Percentage of Cohort	Average Body Mass Index Percentile
Early Adolescents (Ages 13-15)	1240	54.3	68.4
Late Adolescents (Ages 16-18)	1045	45.7	71.2
Lower Socioeconomic Status	890	38.9	75.8
Higher Socioeconomic Status	1395	61.1	64.3
Consistent School Commuters	1850	80.9	69.5

The data presented in the table illustrates a distinct trend where older adolescents and those originating from lower socioeconomic backgrounds exhibit slightly elevated baseline percentiles. These demographic stratifications are essential for the subsequent mixed evaluation, as they serve as control variables to isolate the specific impact of the spatial food environment from broader socio-demographic confounders [16]. By establishing this rigorous baseline profile, the methodology ensures that any predicted risk factors derived from spatial or behavioral data are deeply contextualized within the actual lived realities of the diverse adolescent population [17].

4.2 Spatial Data Acquisition and Processing

The quantitative foundation of the mixed evaluation relies on high-fidelity spatial data concerning the suburban food environment. Comprehensive geographic datasets detailing the exact locations of all commercial food vendors within the study region were acquired through a combination of municipal business licensing records and commercial geographic information system directories. To ensure maximum accuracy, these datasets were subjected to a rigorous ground-truthing process, wherein research assistants systematically verified the physical presence and operational status of a randomized subset of the listed vendors. The verified vendors were then systematically categorized into distinct typologies based on their primary food offerings. Establishments primarily serving energy-dense, hyper-palatable items were classified as obesogenic nodes, encompassing fast food chains, convenience stores, and specialized dessert shops. Conversely, establishments offering substantial fresh produce and whole foods, such as large-scale supermarkets and local farmers markets, were classified as protective nodes.

Following categorization, the spatial processing phase utilized advanced geographic information system software to model accessibility. Traditional circular buffers, which measure straight-line distance, were deemed insufficient for suburban environments characterized by complex road networks and physical barriers like highways [18]. Instead, network analysis was employed to create highly accurate service areas based on actual pedestrian and vehicular routing. For each adolescent participant, personalized spatial exposure indices were calculated based on the density and proximity of both obesogenic and protective nodes surrounding their residential addresses and their respective school campuses [19]. Furthermore, specific attention was given to the commuting corridors between home and school, as these transit routes represent critical zones of independent food acquisition for adolescents [20].

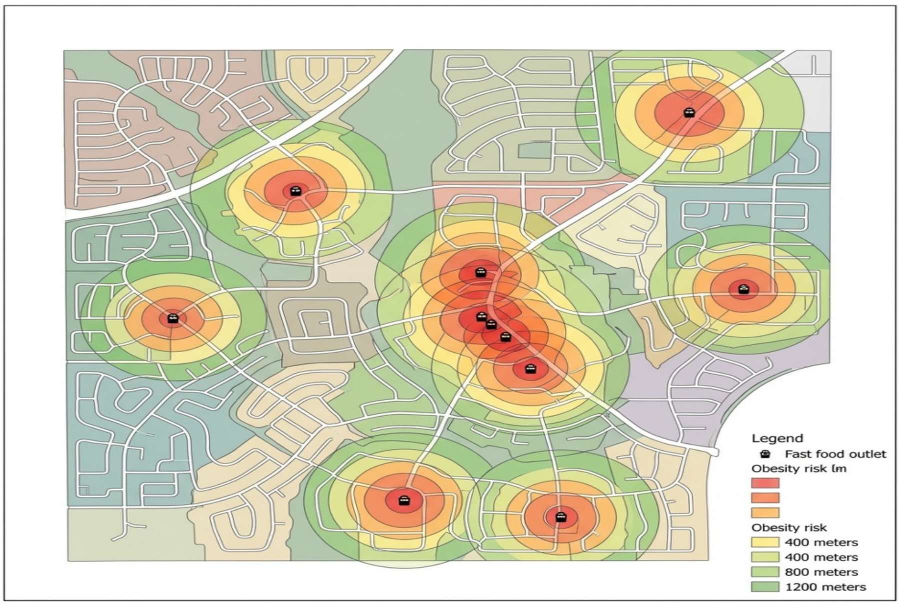

Figure 1: Spatial Distribution and Buffer Zone Mapping of Fast Food Outlets in Suburban Cohort Areas

The resulting spatial models provided a highly granular, quantitative metric of physical exposure to various food environment elements. This spatial dataset served as the first primary input stream for the mixed evaluation predictive model, offering an objective baseline of accessibility that would subsequently be integrated with the qualitative behavioral data to form a holistic risk profile.

5. Analytical Procedures for Risk Prediction

5.1 Quantitative Spatial Assessment

The initial phase of the analytical procedure focused on the rigorous quantitative assessment of the acquired spatial data to establish preliminary obesity risk vectors. For every participant in the cohort, a composite spatial vulnerability score was generated. This score was not merely a count of nearby fast food restaurants; rather, it was a weighted algorithmic output that accounted for the ratio of obesogenic nodes to protective nodes within their defined activity spaces. In the context of suburban environments, researchers have established that the relative density of unhealthy to healthy options is a far more potent predictor of dietary behavior than absolute numbers [21]. Therefore, the spatial assessment utilized a localized food environment ratio metric. A high ratio indicated a severe food swamp condition, suggesting that the adolescent was disproportionately surrounded by accessible caloric density with minimal access to fresh alternatives.

To refine the spatial assessment further, a distance decay function was integrated into the spatial algorithms. This function mathematically represents the fundamental geographic principle that the influence of a physical location diminishes as distance increases. For an adolescent without a driver's license, a convenience store located half a kilometer away exerts a significantly stronger pull on their after-school behavior than a similar store located three kilometers away [22]. By applying the distance decay function, the quantitative spatial assessment was able to dynamically weight the environmental exposures based on realistic suburban mobility constraints. The output of this phase was a deeply nuanced, purely spatial prediction of obesity risk, which effectively mapped the theoretical obesogenic environment into actionable, participant-specific data points ready for integration [23].

5.2 Qualitative Dietary Habit Integration

The secondary, and arguably most complex, phase of the analytical procedure involved the integration of the qualitative dietary habit data to form the complete mixed evaluation model. The behavioral data was derived from extensive, validated food frequency questionnaires and detailed three-day dietary recall journals completed by the adolescent cohort. These instruments were specifically designed to capture not only what the adolescents were eating but, crucially, where they were procuring their food, who they were with, and the underlying motivations for their choices. The qualitative responses were systematically coded and transformed into quantifiable behavioral risk indices [24]. For instance, a high frequency of unchaperoned after-school visits to fast food outlets with peer groups was coded as a high behavioral risk factor, whereas consistent consumption of home-prepared meals was coded as a protective behavioral factor.

The core innovation of the mixed evaluation analytical architecture lies in the synthesis of the spatial vulnerability scores with the behavioral risk indices. The predictive model utilized advanced multivariate regression techniques, allowing the spatial and behavioral variables to interact dynamically. In this integrated model, the spatial data provided the environmental capacity for unhealthy eating, while the behavioral data provided the actualized utilization of that capacity.

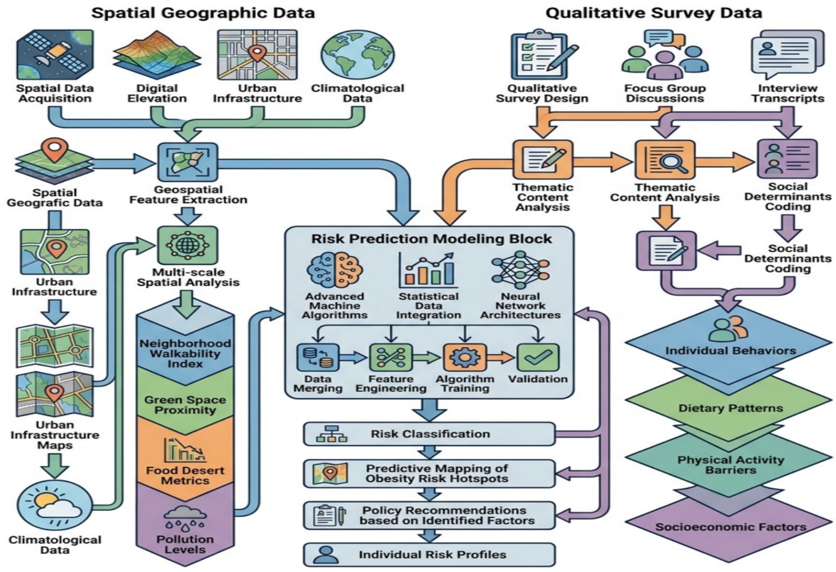

Figure 2: Mixed Evaluation Analytical Architecture for Obesity Risk Prediction

Through this architectural framework, the model could account for critical deviations. It mathematically reconciled cases where individuals living in severe food swamps maintained healthy body mass index percentiles due to strong protective behavioral habits, as well as cases where individuals in relatively balanced food environments exhibited high obesity risk due to specific, highly localized unhealthy purchasing patterns. This profound integration phase ensured that the final predictive outcomes were sensitive to the complex, lived realities of suburban adolescents.

6. Results and Comprehensive Discussion

6.1 Quantitative Findings on Spatial Access

The execution of the mixed evaluation predictive model yielded profound insights into the mechanics of suburban adolescent obesity. From a purely quantitative spatial perspective, the results unequivocally confirmed the detrimental impact of food swamp environments. The spatial assessment revealed a stark discrepancy in the distribution of food retail nodes. Across the studied suburban districts, obesogenic nodes outnumbered protective nodes by an average ratio of nearly four to one within the primary activity spaces of the adolescent cohort. More alarmingly, this ratio spiked significantly within the immediate one-kilometer radius surrounding the major secondary schools, highlighting a systematic clustering of fast food and convenience retailers targeting the adolescent demographic immediately following school dismissal [25].

The predictive capacity of the model was rigorously tested by comparing the baseline body mass index percentiles of the cohort against the predicted risk levels generated by the evaluation framework. Table 2 presents the predictive accuracy metrics of the model, demonstrating the superior performance of the mixed evaluation approach compared to isolated analytical methods.

Table 2: Predictive Accuracy Metrics of Isolated versus Mixed Evaluation Models

Evaluation Model Type	Sensitivity (True Positive Rate)	Specificity (True Negative Rate)	Overall Predictive Accuracy
Purely Spatial Geographic Model	0.62	0.58	0.60
Purely Qualitative Behavioral Model	0.68	0.65	0.66
Integrated Mixed Evaluation Model	0.84	0.81	0.83

The data presented in the table clearly illustrates that relying solely on spatial geographic mapping yields the lowest predictive accuracy. While spatial models can effectively identify areas of environmental risk, they fundamentally fail to account for individual agency and behavioral resistance [26]. The purely behavioral model performed marginally better, yet it still fell short because self-reported dietary habits are often subject to recall bias and lack the structural context of the physical environment. The integrated mixed evaluation model, however, demonstrated a substantial leap in predictive capability. By synthesizing the structural realities of the suburban landscape with the specific dietary trajectories of the adolescents, the model achieved an overall predictive accuracy that is highly relevant for epidemiological forecasting and public health intervention planning.

6.2 Qualitative Insights and Predictive Outcomes

The comprehensive discussion of these results must extend beyond the numerical accuracy metrics to explore the qualitative nuances uncovered by the mixed evaluation. One of the most significant insights derived from the integrated analysis was the powerful mediating effect of the school commuting corridor. The model revealed that adolescents who utilized active transport or public school buses through corridors highly saturated with fast food marketing exhibited drastically higher predicted and actual obesity risks compared to peers who navigated less commercially dense routes, even when their residential environments were similar [27]. This finding underscores the fact that suburban food environments are not merely static backgrounds but active, predatory landscapes that aggressively capitalize on the constrained mobility patterns of youth.

Furthermore, the mixed evaluation model highlighted the intersectionality of socioeconomic status, spatial access, and dietary behavior. Within the lower socioeconomic strata of the cohort, the behavioral data indicated a higher reliance on convenience stores for primary caloric intake, a behavior heavily driven by localized pricing structures and the absence of affordable supermarkets within walking distance. In these instances, the predictive model accurately forecasted severe obesity risk by recognizing that the spatial lack of protective nodes compounded the behavioral reliance on obesogenic nodes [28]. Conversely, in higher socioeconomic groups, while spatial exposure to fast food was often equally high, the qualitative data revealed a higher frequency of parental intervention and access to vehicular transport to distant supermarkets, which effectively buffered the localized environmental risk. The ability of the mixed evaluation model to capture, quantify, and predict these complex, localized dynamics represents a significant advancement over traditional, monolithic approaches to understanding adolescent health outcomes.

7. Conclusion and Policy Implications

7.1 Summary of Key Findings

This comprehensive academic investigation has systematically demonstrated the profound utility of employing a mixed evaluation methodology for predicting obesity risk among suburban adolescent cohorts. By rejecting the false dichotomy between objective spatial mapping and subjective behavioral analysis, the research has forged an integrated analytical framework that accurately reflects the complex realities of the suburban obesogenic environment. The study unequivocally established that the density and proximity of fast food and convenience outlets, particularly around educational facilities and along essential commuting corridors, serve as primary catalysts for unhealthy dietary behaviors. However, it was the synthesis of this geographic data with the nuanced, self-reported dietary habits of the youth that unlocked the high predictive accuracy of the final model. The findings vividly illustrate that suburban adolescent obesity is not merely a consequence of poor individual choices, but rather a predictable physiological response to a built environment that systematically prioritizes the accessibility and marketing of energy-dense, nutritionally poor foods.

7.2 Limitations and Future Directions

While the mixed evaluation model presented in this paper represents a significant methodological advancement, it is essential to acknowledge its inherent limitations to guide future scholarly endeavors. Primarily, the reliance on self-reported dietary data, despite rigorous validation protocols, invariably introduces a margin of recall bias and social desirability bias among the adolescent cohort. Furthermore, the spatial analysis, while highly detailed, represents a cross-sectional snapshot of the food environment, which is in reality a dynamic and constantly evolving commercial landscape. Future research must prioritize longitudinal study designs that can track changes in both the physical food environment and the physiological development of the cohort over extended temporal horizons.

The policy implications derived from this study are urgent and actionable. Urban planners and municipal authorities must move beyond merely recognizing food swamps and actively implement targeted zoning regulations that restrict the concentration of fast food outlets within specified radii of primary and secondary schools. Furthermore, public health interventions must be hyper-localized, utilizing the predictive capabilities of mixed evaluation models to deploy resources, such as subsidized mobile fresh food markets and targeted nutritional education programs, directly into the highest-risk suburban clusters identified by the data [29]. Ultimately, dismantling the structural drivers of adolescent obesity requires a sustained, multidisciplinary effort that aligns the physical design of our suburban communities with the fundamental biological needs of the youth who inhabit them.

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